

LOAD RUNNER

THE GALAXY'S FIRST COMPUTER COMIC

THE TIME IS THE NOT-SO-DISTANT **FUTURE**.
THE LOCATION IS THE CORE OF THE MOST **ADVANCED** COMPUTER IN THE WORLD.
THE RESULT IS **DEADLY!**

H-PRINT 53
TRACE MALE



= PROGRAM - **LOAD RUNNER**.
FILE - **MIKE ROMAN**.
UPDATE - SUBJECT HAS SO FAR SURVIVED THE MOST LETHAL GAMES TESTS. GAMES NOW UPGRADED TO EVALUATE HIS **ABSOLUTE LIMIT**.



FILE - **PETRA**.
SUBJECT STILL UNIDENTIFIED. CITY RECORD FILES NOT ACCESSED... CHECKING...

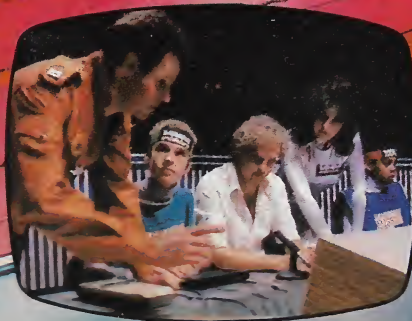
DEEP WITHIN THE COMPUTER'S **MEMORY**, A NEW GAME BEGINS...



**SURPRISES
FOR BEV**

**MAGIC MICRO
MISSION**

**RACE OF
THE ROBOTS**





ALTHOUGH THE COMPUTER HAS ERASED HIS MEMORY, LOAD RUNNER IS SUDDENLY FROZEN BY A GLIMPSE OF HIS RECENT PAST...



...AND THEN MOVES!



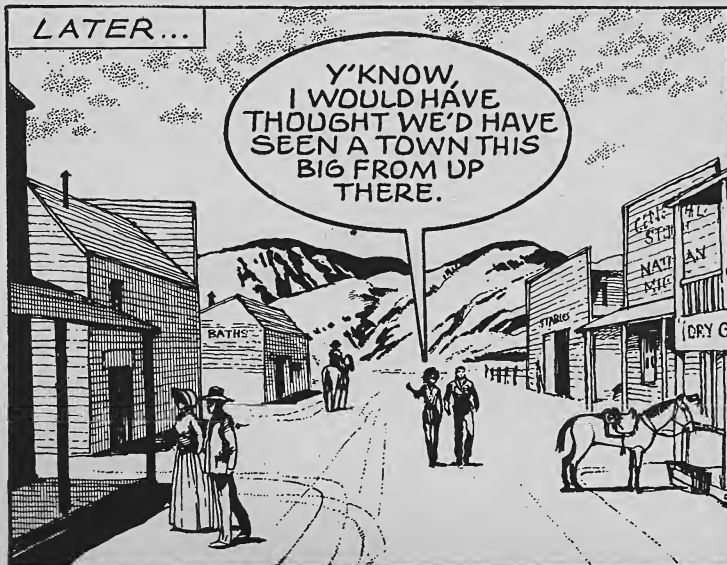
THAT WAS PRETTY FAST SHOOTING. ARE YOU USED TO HANDLING A GUN?



I GUESS I MUST BE. I DIDN'T EVEN STOP TO AIM!



LATER...





ME? I'M JUST TRYING TO STAY **ALIVE**. BUT SOMETHING OUR LATE FURRY FRIEND SAID...

HE ALSO SAID HE'D NEVER SEEN TWO HUMANS TOGETHER BEFORE. PERHAPS THAT'S HOW WE'VE WON SO FAR.

LOOK THERE. ANDROIDS DON'T **DRINK**, SO THE LIQUID IS UNNECESSARY. IT'S JUST A DETAIL. I FILLED OUR GLASSES FROM THE **HORSE TROUGH** OUTSIDE.

RIGHT. THERE HAVE BEEN **OTHER** LOAD RUNNERS. AND NONE OF THEM **SURVIVED**.

UGH, THIS DRINK IS **AWFUL!**

WHILE LOAD RUNNER AND PETRA TALK, THE COMPUTER IS BUSY...

HORSE TROUGH?!

DON'T WORRY THEY'RE **ROBOT** HORSES. REMEMBER?

= NEW ROUTINES ENTERED. GAME LOADED. RUN.

= FEMALE NOW IDENTIFIED AS **PETRA HAWKE**. DOWN LOADING DATA FROM **CITY RECORDS**.

OW! MY ARM. YOU...

I'LL BE BACK IN A MINUTE. I'M JUST GOING TO OUT-DRAW THIS **TIN CAN!**

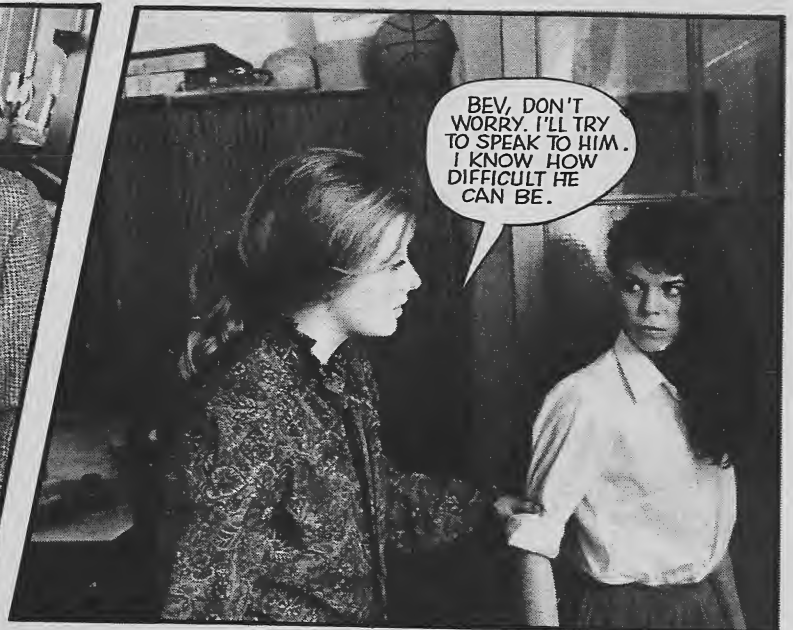
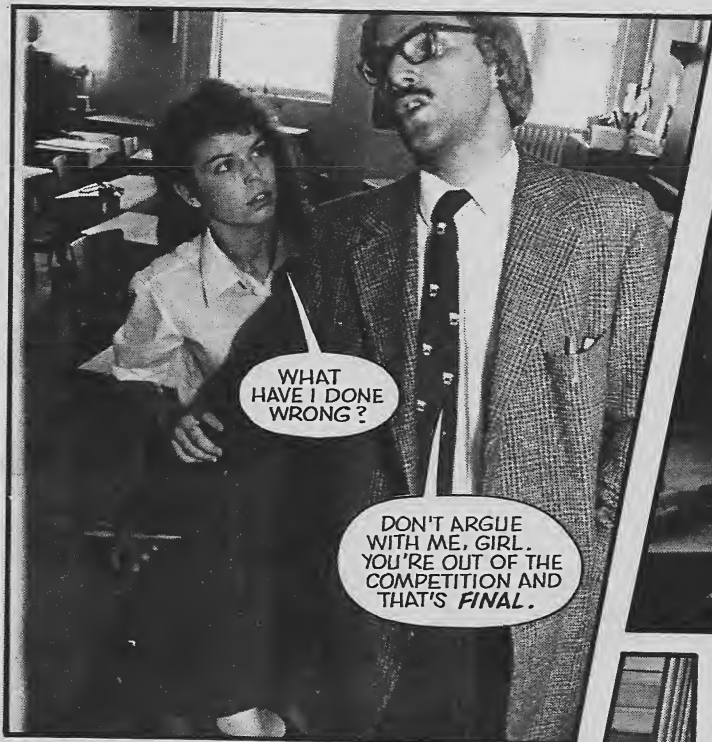
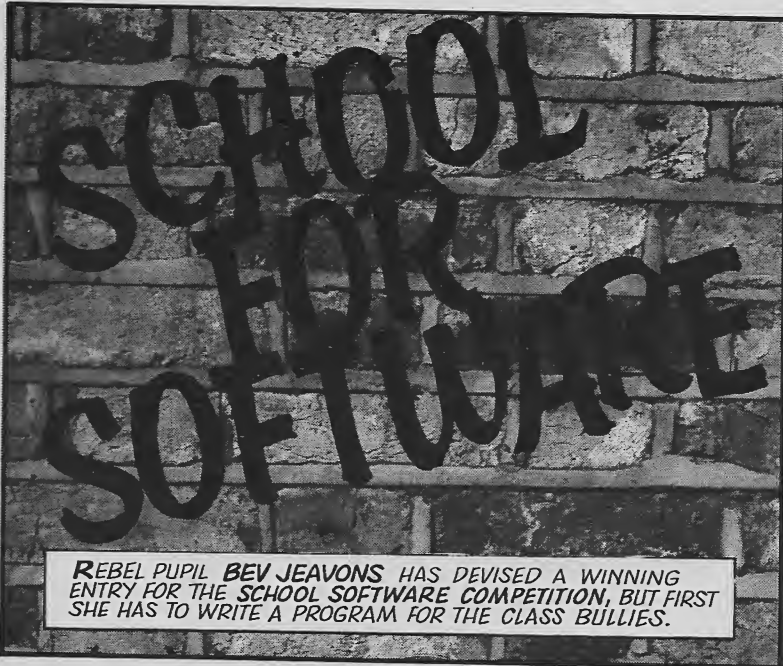
JEST YOU WATCH YOURSELF STRANGER!

WE'LL SORT THIS OUT NOW-GIT YERSELF **OUTSIDE!**

I HOPE SO, LOAD RUNNER. HE JUST MIGHT BE **FASTER** THAN YOU -AND YOU'VE GOT **MORE TO LOSE!**

NEXT PRINTOUT: GUN FIGHT!

SCHOOL FOR SOFTWARE



SCRIPT: FRANK HOPKINSON

PHOTOS: HENRY ARDEN

LETTERS: JACK POTTER



I WANT MY FILE BACK NOW.

YOU'RE ONLY GETTING IT BACK IF *THIS* IS GOOD ENOUGH. P'RAPS NOT AT ALL.

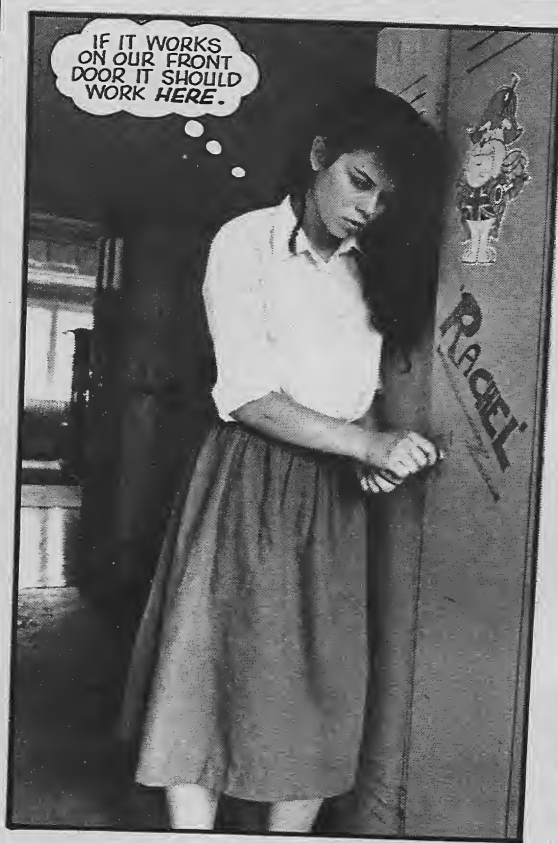


YOU PROMISED.

WE DON'T MAKE PROMISES. GET LOST, KID!



I DIDN'T WANT TO HAVE TO DO THIS, BUT I'VE GOT NO CHOICE NOW.



IF IT WORKS ON OUR FRONT DOOR IT SHOULD WORK *HERE*.

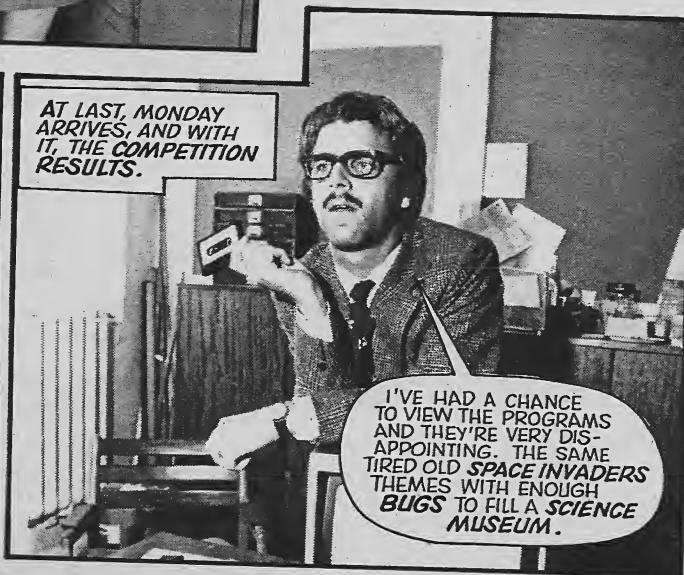


GOT IT! NOW I NEED TO TRANSFER THE PROGRAM ONTO TAPE.



THAT WAS MISS PATTERSON. WHAT WAS SHE DOING WITH THE *SCHOOL MICRO*?

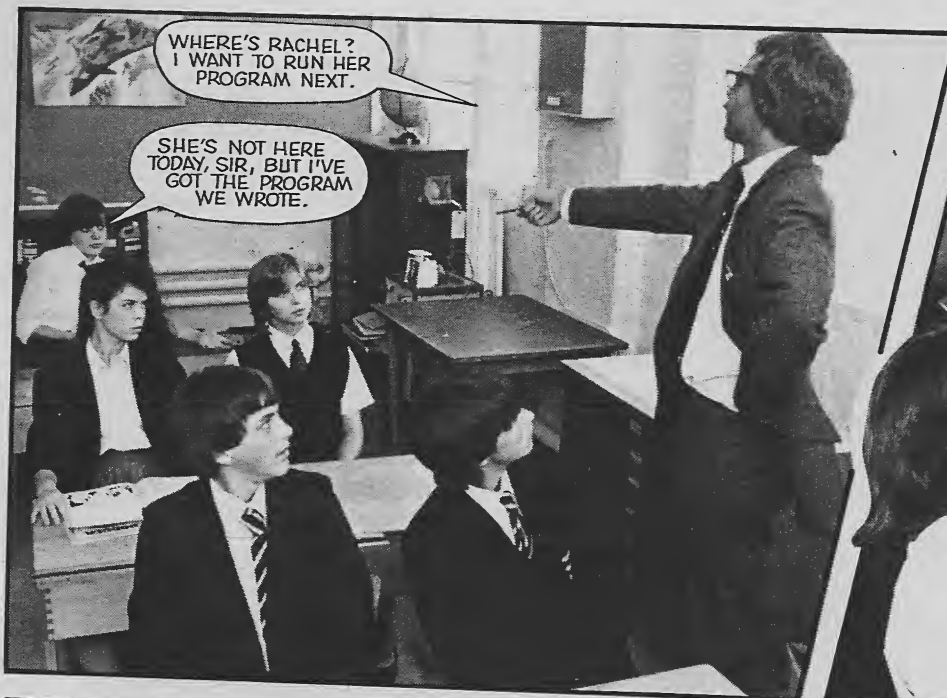
SEARCH ME.

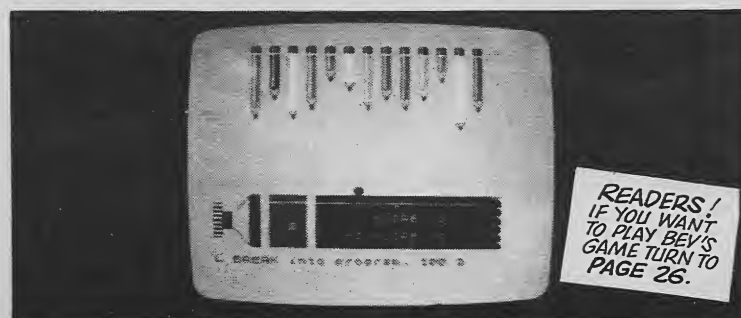
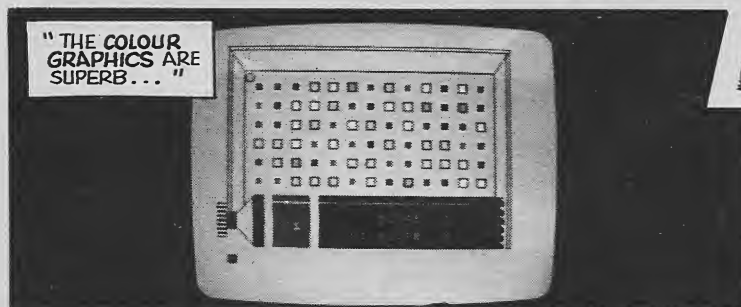


AT LAST, MONDAY ARRIVES, AND WITH IT, THE *COMPETITION RESULTS*.

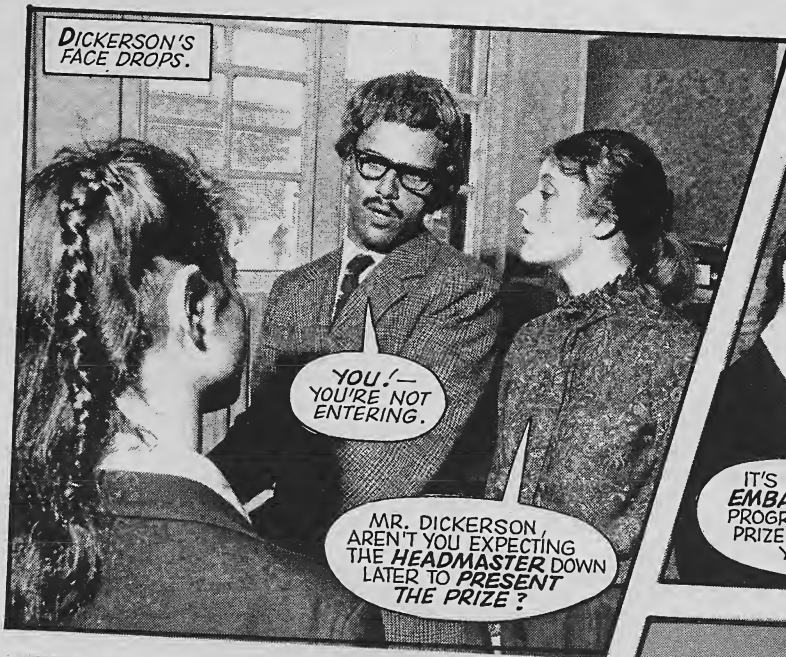
I'VE HAD A CHANCE TO VIEW THE PROGRAMS AND THEY'RE VERY DIS-APPOINTING. THE SAME TIRED OLD *SPACE INVADERS* THEMES WITH ENOUGH *BUGS* TO FILL A *SCIENCE MUSEUM*.

SCHOOL FOR SOFTWARE





SCHOOL FOR SOFTWARE



DECODERS 25 prizes of Macdonald Computer Books

IN THIS PRINTOUT there are prizes galore to be claimed by lucky Decoders. Four Macdonald Educational books on computers are being given away to each of the 25 Decoders whose membership numbers are listed in the coded printout below. The four books are *Whizzkids Computers*, *Introducing Computers*, *Computers and Mathematics*, and *Just Look at Computers*. The books, which are reviewed at length on page 37, are well-illustrated, informative and easy to read; the complete set provides an excellent introduction to the world of new technology.

To discover whether you are one of the lucky ones, decode the coded printout using your cipher book. If your number is included, claim your prize by writing your name, address and membership number on a postcard, and post it to: Decoder Books, *Load Runner*, 196-200 Balls Pond Road, London N1 4AQ, to arrive not later than December 9.



Keyword No 2

HGT ZTNH IHRN GAGT.
HGT HGT GAGT IAUT.
HGT QKNTT IAUT ZTNH.
HGT QVH IHRN GAGT.
HGT QKNTT IAUT QVH.
HGT HGT PAW QKNTT.
HGT QVH IHRN IAUT.
HGT HGT TACKO IHRN.
HGT QVH ZTNH QKNTT.
HGT ZTNH GAGT QVH.

HGT HGT HGT IHRN.
HGT QVH QKNTT HGT.
HGT QKNTT QVH PAW.
HGT ZTNH ZTNH HGT.
HGT HGT IHRN IAUT.
HGT QVH HGT ZTNH.
HGT HGT ZTNH IAUT.
HGT QKNTT HGT QKNTT.
HGT QVH PTUTC GAGT.
HGT QVH IAUT QVH.
HGT QKNTT QVH PTUTC.
HGT HGT PTUTC IHRN.

HGT ZTNH PAW QKNTT.
HGT QKNTT IAUT PAW.
HGT QVH IAUT IHRN.



Join the Club

THE LOAD RUNNER DECODERS is a rapidly-growing fan club for readers of the first computer comic in the galaxy. A new member will receive a personalised Security Pass with his or her photograph mounted on it, together with a membership number. This Security Pass will give the bearer a reduced admission charge to exhibitions and computer fairs announced from time to time in the Decoders page of *Load Runner*.

Each member will also receive the Decoders Cipher Book which provides the key to the coded messages which appear in each printout. Exciting prizes are awarded to successful Decoders whose membership numbers appear in those messages.

The cost of membership is £3. If, however, you cut out the word Decoders from the top of this page and from one other printout of *Load Runner*, you can join the club at the special reduced rate of £1. Simply fill in the application form below and send it together with your membership fee and TWO passport-size photographs to: The Controller, *Load Runner Decoders*, ECC Publications, 196-200 Balls Pond Road, London N1 4AQ. Please make cheques or postal orders payable to ECC Publications Ltd.

List below the story-programs and fact-routines you like best in *Load Runner*.

- 1
- 2
- 3

What do you dislike most in *Load Runner*?

Do you have a computer? YES/NO

Name Age

Address

ZX MICROFAIR Decoder Discounts

CALLING ALL DECODERS! At the ZX Microfair, held at the Alexandra Palace, Wood Green, London N22, on Saturday December 4 and Sunday December 5, *Load Runner Decoders* will be entitled to a 50% discount on the normal admission charges of 50p for children and £1 for those over 14, on presentation of a Decoder Security Pass. **AND THAT'S NOT ALL . . .** My operators have negotiated additional discounts on software bought from the following software houses which will be appearing at the show:

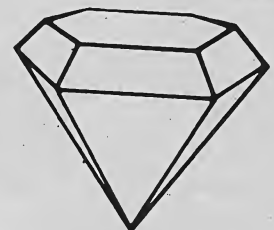
ARTIC COMPUTING — a 30% discount on all software.

CRYSTAL COMPUTING — a 30% discount on all software.

MIKRO-GEN — a 50p discount IN ADDITION to all other discounts offered at the fair.

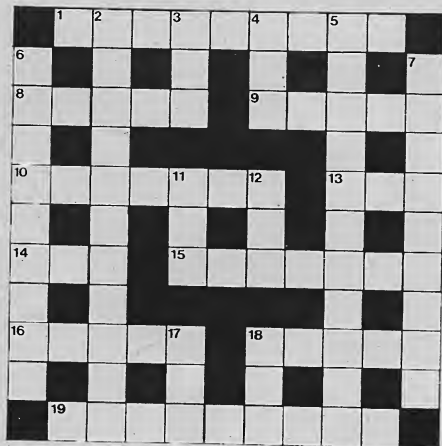
The discounts will be effective only for the duration of the fair, so make sure that you don't miss this great opportunity to buy the latest Sinclair software at knock-down prices. **REMEMBER**—all discounts can be offered only on presentation of your Decoder Security Pass. See you there!

The Controller



MIKRO-GEN

Wordplotter 12



Across

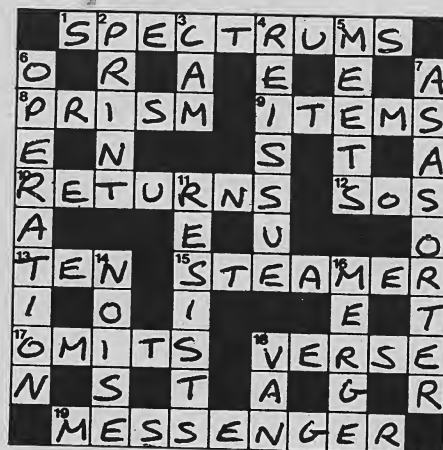
1. Bits of electricity in the latest Acorn micros (9)
8. What our problem page offers (5)
9. A digital computer on your wrist? (5)
10. Star leg? No, not at all small (7)
13. The National Computing Centre (3)
14. Summer-time skin colour given by some micros (3)
15. What computers do all the time (7)
16. Choose the first bit of 1 (5)
18. Did it come before chicken? (2,3)
19. How to succeed in psychiatry and computing (2,7)

Down

2. Are you if you're reading this? (4,7)
3. Be able to tin (3)
4. Drive a boat across a matrix (3)
5. 1½, 2½, 3.3 are (3,8)
6. Personal potentials a computer may aid (9)
7. See if it's + or - ! (5,4)
11. Electronic data processing (3)
12. Number of binary numbers... (3)
17. ... and that of decimal ones (3)
18. Get sick of beer I hear (3)

COMPUTATIONS

Wordplotter 11 Solution



INPUT/OUTPUT

Disc error

RECENTLY I bought my first copy of Load Runner (Printout No 9) which had a disc—for the BBC B, Spectrum 48K and the Dragon 32K—on the cover. I bought the First Computer Comic in the Galaxy—at an out-of-this-world price—for the Dragon 32 disc program to see what kind of a program it was. Very much to my disappointment you did not state whether to use CLOAD (for Basic) or CLOADM (for machine code) to LOAD the program into the computer.

If you give away discs in the future please could you state CLOAD or CLOADM so that readers can LOAD the program for the Dragon.

John Winter (and Dragon 32),
Aylesbury, Bucks.

My operators have been reprimanded for the omission. To load the Mainframe record program for the Dragon 32 it is necessary to type CLOADM ENTER followed by EXEC. Apologies to all Dragon users.

Hit record

CONGRATULATIONS on a fantastic free gift. The kaleidoscopic effect looks very professional on my colour television. It just goes to prove that Load Runner is the best comic on the market.

Nick Venitt, Street, Somerset.

I will pay £3 for each letter or joke printed.

Write to: The Controller,
Load Runner,
196-200 Balls Pond Road,
London N1 4AQ

Boys' own?

PLEASE will you use your super-galactic authority to settle an argument between my sister and me?

Every fortnight when my mum brings home my copy of Load Runner my sister always wants to read it. I've told her that she should stick to girls' comics as Load Runner is for boys. Please tell her that I am correct and then I might get a chance to read Load Runner in peace.

Christopher Irwin, Beeston, Leeds.

You are not correct, Christopher, and I'm sure some very angry female Decoders, led by an even angrier Bev Jeavons, would be only too willing to indicate the ERROR message in your output. Load Runner is for anyone, boy or girl, who likes computers and fun.

Andy rules OK

AT FIRST I didn't think I would write to you but as the Input/Output letters seem to be from readers younger than me I've decided to write. I won't bother saying fab, brill or whatever because if your comic wasn't at least interesting I wouldn't buy it. I think the best story-program is Andy Royd. The best fact-routine is Arcade Archives.

I hope to get a Spectrum soon but I use our school computers and those of my friends.

Remember — keep going, and don't stop like many other comics.

A future computer owner,
Stephen Smith, 13, Louth, Lincs.

Short stories

I THINK your comic is the best out and nothing will stop me buying it. Load Runner is becoming more and more exciting and it's extremely annoying that there it only runs for four pages.

I used to own a computer and I am getting one at Christmas so I am very pleased that more and more game-programs are being printed. All in all, three cheers for Load Runner.

Neil Broadley, Mansewood, Glasgow.

Many readers have complained that the story-programs in Load Runner are too short. From time to time my operators and programmers run extra-long episodes of your favourite stories; both Andy Royd and the final exciting episode of School for Software have additional thrill-packed pages in this printout.

Competition Winners

Below are the winners of the Acorn Electron Competition in Printout No 7 and the Spectrum Competition in Printout No 9.

Acorn Electron winners

John Gibson Hill, Crawley, W. Sussex; Darren Hill, Halliwell, Bolton.

Acornsoft winners

Alex Andrews, London NW6; Jonathan Warren, Chelmsford, Essex; Jan Francis, Tetbury, Glos; Henry Harrison, Leatherhead, Surrey; Philip Goode, Malvern, Worcs; S Esmail, Newton, Southampton; Neil Gatten, Cumbria; Brenda Massie, Fraserburgh; Philip O'Connor, Blackburn, Lancs; David Threasher, Winscombe, Avon; Paul Stevens, Reading, Berkshire; Thomas Hughes, Winterbourne, Bristol; Chi-Wah Yau, London NW1; Jeremy Plazare, Edinburgh; J Finniss, Croydon, Surrey; David Peek, Banstead, Surrey; Mark Bradley, Burnham, Somerset; Ian Han, Runcom, Cheshire; Andrew Oldroyd, Kilbirnie; Gianpeiro Conagiaco, Edinburgh.

Spectrum winners

Thomas Hilyer, Sheffield; Richard Marcus, Finningham, Suffolk; Lorraine Summerscales, Stancliffe, Batley.



Second
Edition Just
published

THE GOOD COMPUTING BOOK FOR BEGINNERS

PLUS a complete practical glossary of terms

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and nothing you don't
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account Visa/Access/Diners/Amex number _____
Signature _____ Name _____ Address _____
Send to: _____ (please print clearly)
ECC PUBLICATIONS LIMITED
196-200 Balls Pond Road
London N1 4

Andy Royd - the DOMINATORS Rogue star!

THE ONLY HUMAN BRAIN IN ROBOT-DOMINATED SPORT, ANDY ROYD IS HACKED DOWN IN EVERY MATCH BY A ROBOXER PROGRAMMED TO PLAY FOOTBALL. HE DECIDES TO TAKE MATTERS INTO HIS OWN HANDS.



THERE IT IS - I'VE GOT TO GET IN THERE!

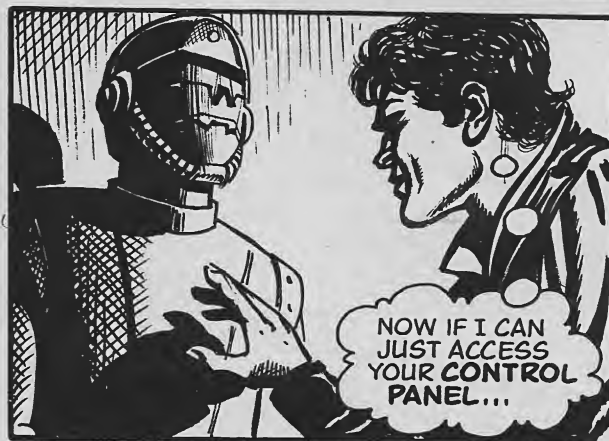


USING HIS ARTIFICIAL STRENGTH...



...ANDY CONFRONTS THE MASSIVE MACHINE!

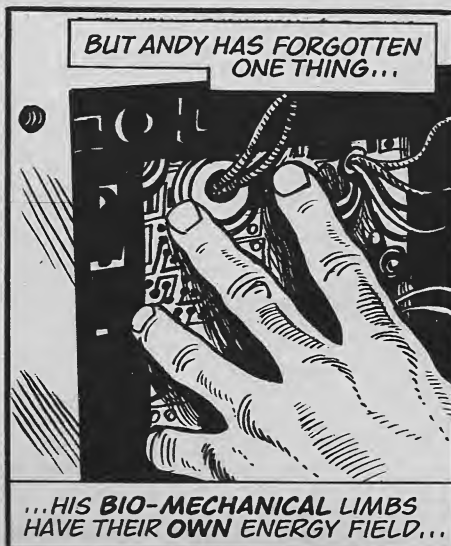
RIGHT, BIG BOY. LET'S SEE WHAT WE CAN DO TO TAKE YOU OUT!



NOW IF I CAN JUST ACCESS YOUR CONTROL PANEL...



GENTLY DOES IT...



BUT ANDY HAS FORGOTTEN ONE THING...

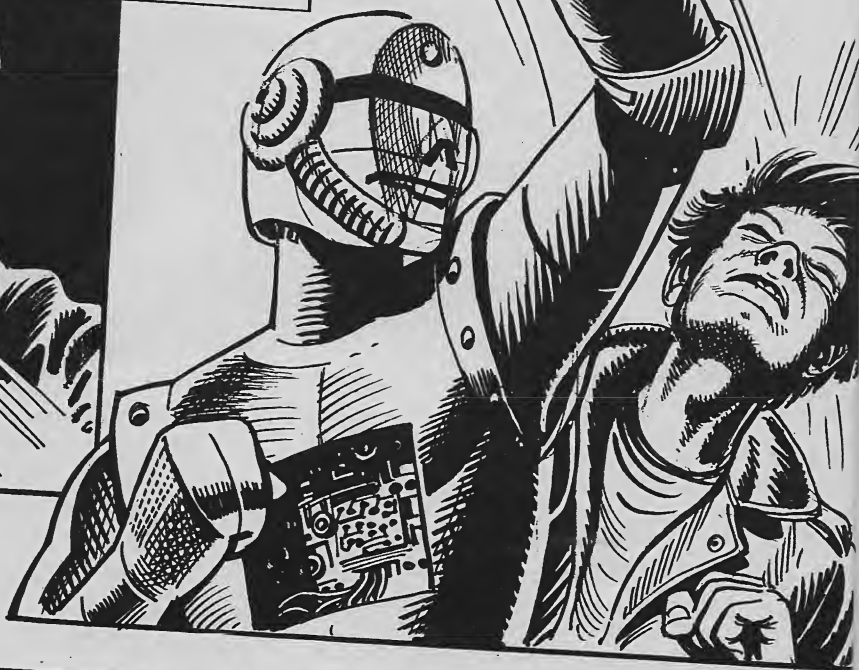
...HIS BIO-MECHANICAL LIMBS HAVE THEIR OWN ENERGY FIELD...

...AND AS HIS FINGERS PROBE THE ROBOXER'S CIRCUIT BOARDS, POWER SURGES THROUGH THE FIGHTING MACHINE'S FRAME!





THE ACTIVATED PROGRAM
IN THE ROBOXER'S MEMORY
SMASHES THROUGH ANDY'S
DEFENSES, UNTIL ...



SCRIPT- CHRIS WINCH
ART- JOHN STOKES
LETTERS- CRADDOCK

...THROUGH HIS SCRAMBLED
BRAIN WAVES A DESPERATE
IDEA SURFACES...





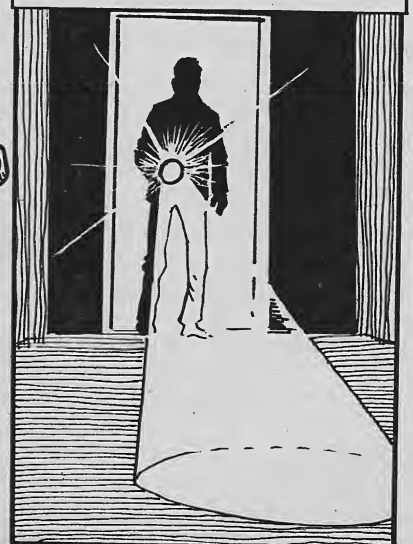
ANDY WHIPS HIS RIGHT ARM UP AND CRASHES IT INTO THE ROBOXER'S EXPOSED CHEST!

SOMEONE'S COMING! WE MUST HAVE WOKEN HALF THE CITY!



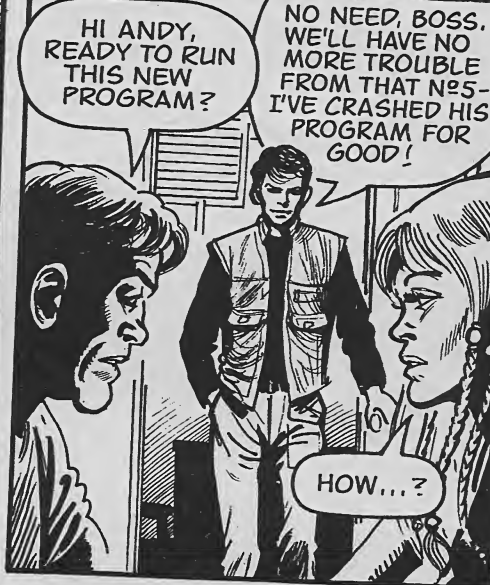
DAMN- THIS ARM'S PLAYING UP.

ROLAND BILES, HIRED BY NEAVE MARSHALL ESTATES IN THE WAR WITH THE DOMS, INVESTIGATES THE NOISE.

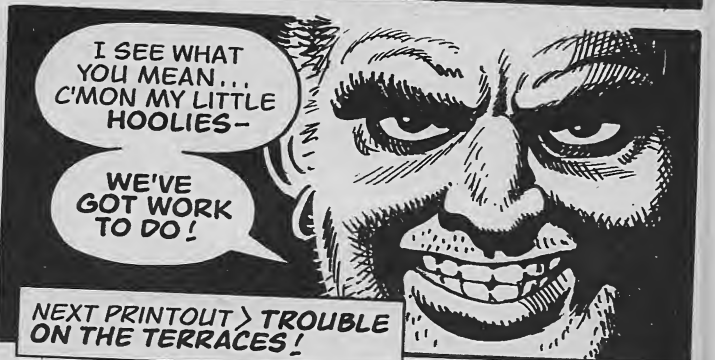
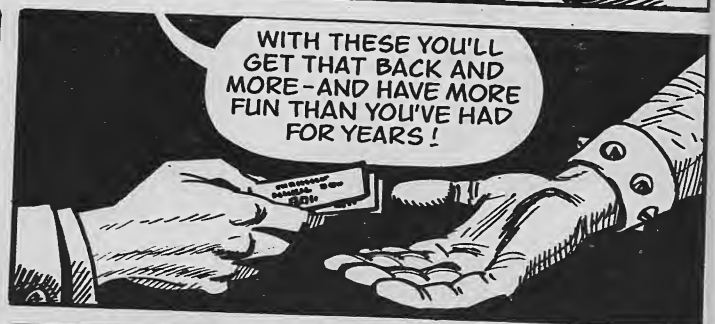
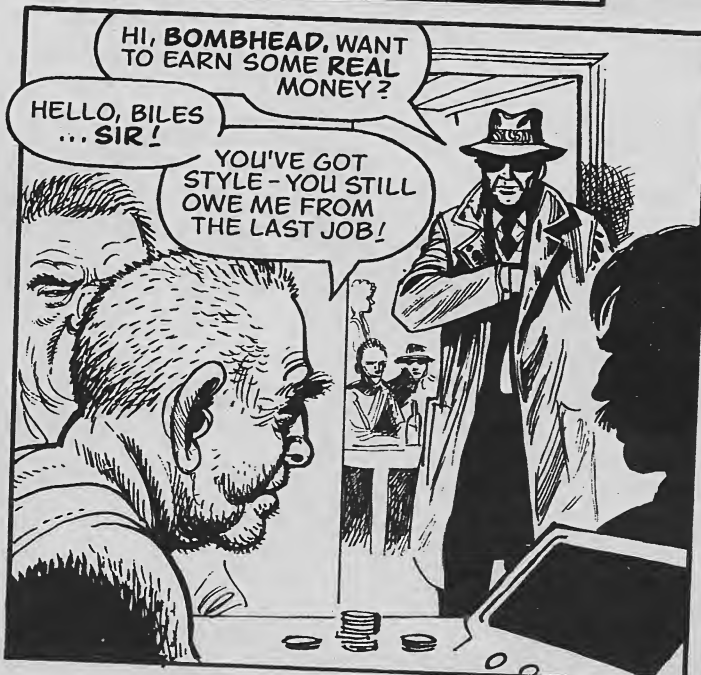
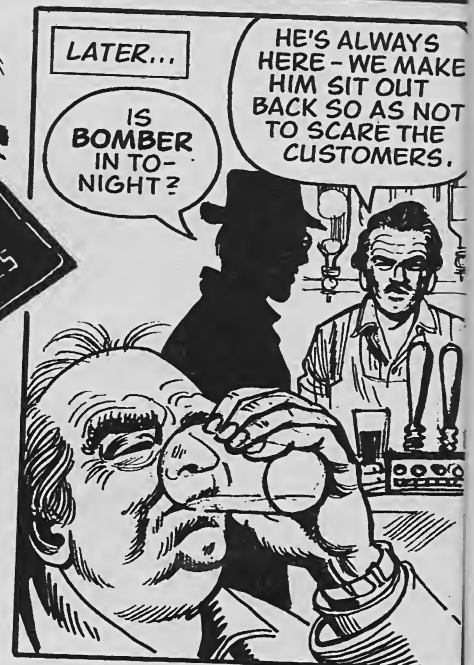
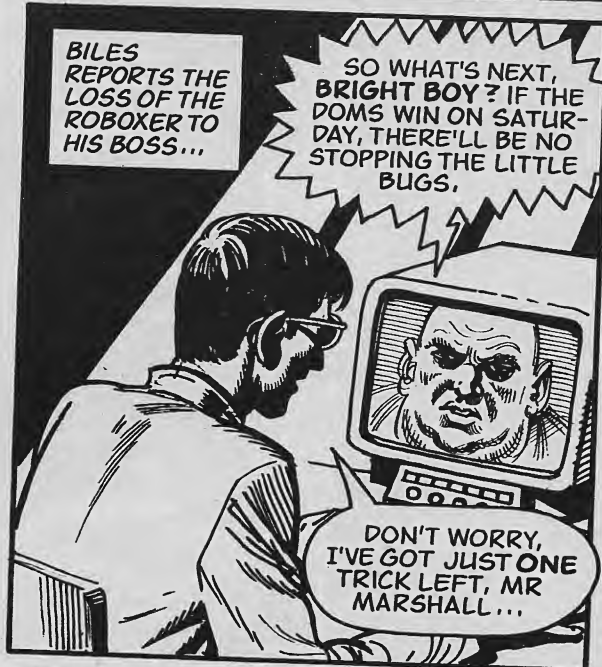




NEXT MORNING, IN THE DOMINATORS' CONTROL ROOM...



DON'T WORRY ABOUT THAT ALL WE'VE GOT TO DO IS RUN THE **BEST** PROGRAM WE'VE GOT AGAINST THE RAMS ON SATURDAY.



NEXT PRINTOUT > TROUBLE ON THE TERRACES!

Intelligent Hobbit

YOU HAVE READ the book, now play the game. The Hobbit is a graphics adventure based on the book of the same name by J R R Tolkien. Previously available only for the 48K Spectrum, it is now produced for the Commodore 64K, Oric-1 and BBC computers, and promises to continue its astounding success. All versions are similar to that for the Spectrum.

Most of the locations visited in the adventure are depicted in high-resolution graphics pictures on the top half of the screen. In the bottom half the locations and actions are described and there is room for you to give orders to the computer which will make your Hobbit move around and perform tasks.

The game exhibits artificial intelligence because, even when you are not playing, the characters such as Gandalf, Thorin and Elrond will seem to act out their own lives. Another interesting aspect of the game is that you can talk to the characters involved. That is where the characters display a great lack of intelligence as usually they reply with something like 'No' or 'Thank you', answers which you would not associate with the question or command which you asked.

Despite the minor problems with the talking characters, The Hobbit is fast and extremely challenging. It should keep you obsessed for months, not weeks. It can be obtained from Melbourne House and costs £14.95.
Fun, 8; addictive, 9; graphics, 10.



Pirate games

GET YOUR CUTLASSES between your teeth and be prepared to repel boarders, you scurvy dogs. In Pirate, a two-part adventure for the BBC 32K, you are captain of a pirate ship, in search of treasure amid the reefs and islands of the high seas. You face untold dangers and unspeakable fates requiring you to make life and death decisions and, be warned, your crew is not above mutiny.

Pirate would make an excellent first foray into adventure gaming as you are compelled to build a mental picture of your surroundings. The continual look-out reports help you find your bearings and the excellent graphics are a constant reminder of your position. Pirate can be obtained from Chalksoft, and costs £9.25.

Fun, 8; addictive, 7; graphics, 9.



**YOU'VE NEVER PLAYED
A GAME LIKE THIS BEFORE**

Shocking!



IN I'm In Shock, for the 16K Spectrum, your shattered forces return to Earth after a protracted battle in deep space. You discover that while you were deployed elsewhere Earth was left open to the main bulk of alien forces. It was an elaborate decoy. The invaders have taken over the earth and you are both attacking and defending your home ground.

The odds are stacked against you and a fair degree of skill and accuracy is needed to ricochet your missiles off the shields on to your attackers. If you are a high score enthusiast you will definitely be hooked on this one. *I'm In Shock* is produced by Artic Computing and costs £4.95.
Fun, 7; addictive, 8; graphics, 6.

Cut and run

EVEN IF you do not like going out into the garden at the weekend to cut the lawn you are sure to appreciate Jeff Minter's new game for the Commodore 64, Hover Bover.

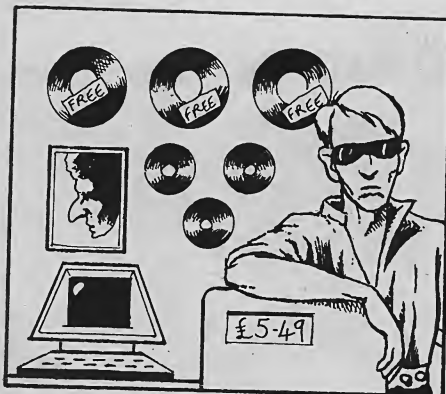
In this arcade-style game you want to mow the lawn but do not have a mower. You borrow one from your neighbour because you are sure he will not mind. The neighbour is furious, however, and will chase you. If he catches you he will take the mower back to his garage.

You have a defence against the neighbour. Your dog will see him off so long as it is loyal to you. If its loyalty level falls below zero, however, it will start to annoy you instead.

If that is not sufficient to put up with on a lazy Sunday afternoon, the gardener will take away your mower if you steer it into the rose beds.

The game is unusual, being very different from space invaders and the other types of games which are on the circuit. The sound capabilities of the Commodore 64 are well-used and the sprite graphics have to be seen to be believed.

Hover Bover is a hilarious game. It can be obtained from Llamasoft and costs £7.50.
Fun, 8; addictive, 8; graphics 9.



Record sales for micros

THE NEXT TIME you buy a pop single at a record shop, look for a computer near the cash register. If you find one, it could mean that the shop is one of those contributing to the top ten charts, compiled for the BBC by Gallup. Each record sold is fed into the computer and added to the sales from other shops. The top-selling singles are then calculated.

Unfortunately, the computers are only as good as the information given to them and there have been instances when false entries have been recorded. Some record companies have been making matters worse by discovering which shops are on the Gallup list, and then offering free gifts to customers who purchase records from those stores. That practice, however, was banned from November 7.

Hopper's hopper

ONE WORD which must make most computer programmers cringe is bugs but did you know that the word for an unidentified hiccup in a program is derived from a real live bug?

Legend says that software pioneer Grace Hopper, who developed the programming language Cobol, discovered the first bug. She was working on a program and could not understand why the system kept failing. It was only when she looked into the computer circuitry that she discovered the culprit, a very angry grasshopper, and the word bug has been used for program faults ever since.



Amazing reductions

THE WORLD of computers is certainly topsy-turvy. Microcomputers need silicon chips to work but now scientists are working at putting a computer on to a single microchip. The new chips, which are still only prototypes, are called transputers and could be used in home computers.

One transputer is expected to be capable of operating at five million instructions per second; today's powerful mainframes which use many ordinary chips work at about 10 million instructions every second. Transputers work by combining information processing, storage and communications functions on a single piece of silicon but sadly the designer, Inmos, is not planning to sell them to computer users until at least next year.

The Computer Story

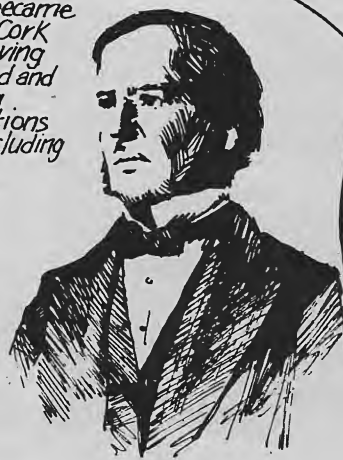
A HISTORY OF COMPUTERS
PART
TWELVE

UNTIL NOW, OUR STORY HAS BEEN MAINLY CONCERNED WITH HARDWARE. BUT OF COURSE NO COMPUTER CAN OPERATE WITHOUT SOFTWARE. HOW DID THIS DEVELOP?

A QUESTION OF LOGIC

GEORGE BOOLE WAS AN ENGLISH PHILOSOPHER LIVING AROUND THE TIME OF BABBAGE. HE SHOWED THAT THE RULES OF LOGIC COULD BE EXPRESSED IN MATHEMATICAL TERMS - IN OTHER WORDS, FOLLOWING THE RULES OF MATHEMATICS, YOU COULD TAKE

GEORGE BOOLE (1815-64)
Son of a tradesman, he became Professor of Mathematics at Cork University, Ireland despite having no degree. He was recognised and rewarded for his outstanding pioneering contributions to symbolic logic - including "Boolean Algebra."



VARIOUS IDEAS (PROPOSITIONS), AND FOLLOW THEM THROUGH TO THEIR ULTIMATE, INESCAPABLE CONCLUSIONS.

BOOLE'S CONCEPT WAS TAKEN UP BY ALFRED NORTH WHITEHEAD AND BERTRAND RUSSELL IN THEIR WORK "PRINCIPIA MATHEMATICA" OF 1913. CONSIDERED TO BE ONE OF THE MOST

INFLUENTIAL SCIENTIFIC TEXTS OF ALL TIME, IT ARGUED THAT LOGIC WAS THE FOUNDATION OF MATHEMATICS RATHER THAN A BRANCH OF PHILOSOPHY - AND PROBLEMS COULD BE CONVERTED INTO MATHEMATICAL FORM FOR A PROGRAMMED COMPUTER TO SOLVE.

Written and drawn by Chris Smithers.

Talk back to teachers

LATEST developments in the United States include educational software for home computer users which allows the student to communicate directly with a teacher. That happens because there is a special button on the student's keyboard which activates communications software in the program, so the message from the student is sent by telephone automatically to the teacher's personal computer.

The teacher can communicate with the pupil in the same way. If either person is not available to receive the message, it is stored until the user returns to the computer. Obviously there is tremendous potential in the idea and it is possible that the system, from Telelearning, will soon be available in the U.K.



• **Buzzwords** are the jargon of the computer world and can be very confusing. Below, *Load Runner* continues its glossary of computing terms. Get buzzing.

• **Line Number.** It is necessary with some computer languages to give each line of instruction in a program a reference point such as a line number. That helps the programmer refer to a particular line. The line number appears at the beginning of a line and the lines following will appear in numerical order.

• **Line Printer.** A device which prints-out data one letter at a time but does so at such a speed that it is regarded as printing a line at a time. A serial or character printer prints letters one at a time and can be seen to be doing so as it operates much more slowly than a line printer.

• **Load.** The process of passing a program or other information stored on a cassette or disc into the memory of the computer. The information needs to be loaded before the computer can run a program.

• **Local Area Network.** An arrangement in which several computers are connected so that their users can share and exchange information.

• **Loop.** An instruction which can be written into a program to make the computer repeat a set of commands continually.

• **Machine Code.** Information has to

be translated into a language understood by the computer before commands can be executed. The language is called machine code and to the user it looks like a series of numbers.

• **Mainframe.** The term applied to a large computer system, not the kind of system to be found in the home. A mainframe is used for such purposes as keeping records of television licences and telephone bills, or booking airline tickets to destinations all over the world.

• **Mega.** Another way of representing one million. A megabyte is one million bytes.

• **Memory.** The computer has a memory in which it can store data and programs. The memory is measured in RAM and ROM. The higher the RAM in kilobytes, the bigger the memory. 1K is a very small memory, whereas 48K is reasonably large.

• **Menu.** A list of options available in a particular program from which the user can choose, in similar fashion to choosing from a menu in a restaurant. When the user has chosen from the menu, the computer will run that part of the program.

BERTRAND RUSSELL (1872-1970)
English philosopher, mathematician and social reformer. An anarchistic, left-wing atheist who actively opposed nuclear weapons, he was one of the most influential intellectuals of the 20th century. His work included philosophy, science, mathematics, ethics, sociology, history, religion and politics. His "Principia Mathematica" was written with his friend and former tutor Alfred North Whitehead, and helped the development of computers and data processing. In 1950 he was awarded the Nobel Prize for Literature.

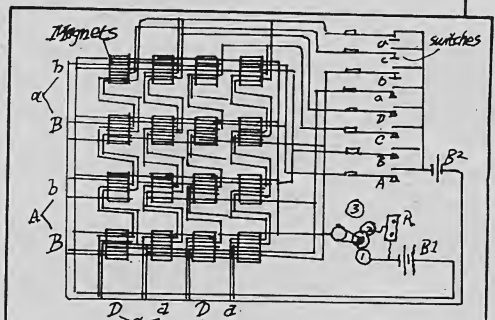
OTHER MINDS HAD ALSO BEEN AT WORK. IN THE 1880s AN AMERICAN LOGICIAN, ALLAN MARQUAND, BUILT A LOGIC MACHINE COMPRISING RODS, LEVERS, POINTERS, ETC. IT COULD COPE WITH FAIRLY SIMPLE PROBLEMS, SUCH AS THE FOLLOWING EXAMPLE, DREAMED UP BY THE ECCENTRIC MATHEMATICIAN AND AUTHOR OF "ALICE THROUGH THE LOOKING GLASS" AND "ALICE IN WONDERLAND," LEWIS CARROLL:

1. NO BIRDS, EXCEPT OSTRICHES, ARE NINE FEET HIGH;
2. THERE ARE NO BIRDS IN THIS AVIARY THAT BELONG TO ANYONE BUT ME;
3. NO OSTRICH LIVES ON MINCE PIES;
4. I HAVE NO BIRDS LESS THAN NINE FEET HIGH.

CAN YOU WORK IT OUT?
THE CONCLUSION IS SHOWN BELOW.

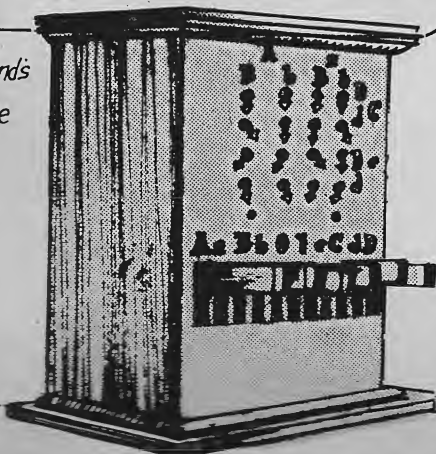
ANSWER: NO BIRD IN THIS AVIARY LIVES ON MINCE PIES.

MARQUAND GOT IN TOUCH WITH (YET ANOTHER) PHILOSOPHER CHARLES PIERCE, WHO SUGGESTED THAT A SYSTEM OF BATTERIES AND SWITCHES COULD BE MADE TO SOLVE COMPLEX LOGICAL PROBLEMS.



AS USUAL, ALL THESE IDEAS LAY DORMANT, WAITING FOR SOMEBODY TO PUT THEM INTO PRACTICE. WE WILL MEET THESE "SOMEBODIES" IN THE NEXT PRINTOUT.

RIGHT: Marquand's logic machine 1890





THE NEW MISSTON

SILICON SUPERSTARS and computer fun are the order of the day in the new Central TV show, the *Magic Micro Mission*. It takes place aboard a spaceship 5,000 light years from Earth. The task of the Mission is to take all the complications out of computing and present an enjoyable side of this fast-growing hobby.

Adrian Hedley, presenter of *Jigsaw* for the last four years, captains the spaceship and Jo Wheeler, a former model, is making her television debut as the captain's assistant. Each week Silicon Superstars such as Dave Lee Travis and Chris Sievey, both of whom have been featured previously in *Load Runner*, appear.

A group of five resident software testers check software on their computers and give their verdicts and opinions. The group, known as The Famous Five, is made up of some children who know only the bare essentials of how to operate a computer and some who can take them apart and put them together again. The Famous Five are Robin Over, 14; Julia Land, 12; Stephen Martin, 16; Leslie Mantock, 12; and Mandy Sharpe, 12. The presence of Julia and Mandy shows that the programme is not just aimed at boys.

Computer expert Dr John Barker answers computer problems in his role as Egghead, the *Magic Micro*

Mission version of Brainy, and there is also a Jargon Gobbler to explain computer buzzwords.

Adrian Hedley and Jo Wheeler are not new to computers. For some time Adrian has owned a Dragon 32 which he uses for playing games, although as yet he has not tried to write programs. Jo Wheeler, who finds computers "both fascinating and enjoyable", gained her interest in computers through her father, a home computer fanatic.

Everything about the show speaks of computers, even down to the credits, which are done on a Sinclair

All aboard for computer fun on Central TV

Spectrum. The producers of the show hope that the early transmission time of 5.15pm on Wednesdays will encourage children and parents to watch and learn together.

The *Magic Micro Mission* is showing on Central, Ulster, Border and TV South from November 9. TV South West will be showing it on Saturday mornings, beginning just before Christmas. No doubt other independent stations will be taking the *Magic Micro Mission* in the new year.

Pictures, clockwise from the top: Adrian, Jo, the Famous Five and Silicon Superstar cricketer David Gower; Egghead Dr John Barker; Captain Adrian Hedley; Captain's Assistant Jo Wheeler. Below: Silicon Superstar musician John Walters.



CHALK & CHIPS

RACE OF THE ROBOTS

Challenge to Youth

BP

buildarobot
competition



Schools meet the challenge with mechanical marvels

ROBOTICS, a subject linked closely with computers, was the theme of the latest BP Oil Challenge to Youth, designed to encourage young people to make imaginative use of their computing and engineering skills. The finals of that Buildarobot competition were held recently at REME's Arborfield Garrison near Reading.

The competition was open to any group of people under the age of 19, and the challenge was either to construct a mobile robot which could find and collect a small cube in the fastest possible time, or to build a

robot to perform any task of competitors' choosing.

The first prize of £500 in the Race of the Robots went to three 17-year-olds at Hinchingsbrooke School, Haddington, pictured left with Kenneth Baker MP, Minister of State for Industry and Information Technology. Their robot took only 15 seconds to retrieve the cube using insect-like arms and electronic eyes. Among the runners-up were a team from King Edward VII Community College, Coalville (pictured bottom left), whose robot, called Sully, was the result of a year's spare time work.

Only 21 schools made it to the finals, from an initial entry involving more than 200 schools. Many of the robots were controlled by computers, and some of the tasks chosen for entrants included talking heads and a chess-playing Anglepoise lamp. Two of the unlucky teams which failed to qualify for the finals are pictured below. Top: Aldershot Comprehensive Sixth Formers meet BP Oil's Robbie Robot — no relation to K9! Bottom: Upton Grammar School computer buffs with the computer-controlled vehicle.



Meet the programmers of a revolutionary 3D game

Girl on the Attack

ANT ATTACK, a new game from Quicksilver for the 48K Spectrum, is a terrifying fight to the death against the monstrous ants which inhabit the walled city of Antescher. The game is remarkable for its use of revolutionary 3D graphics, and also for its casting of either boy or girl in the role of the heroic adventurer who scales walls, stuns deadly ants and rescues the unfortunate victim.

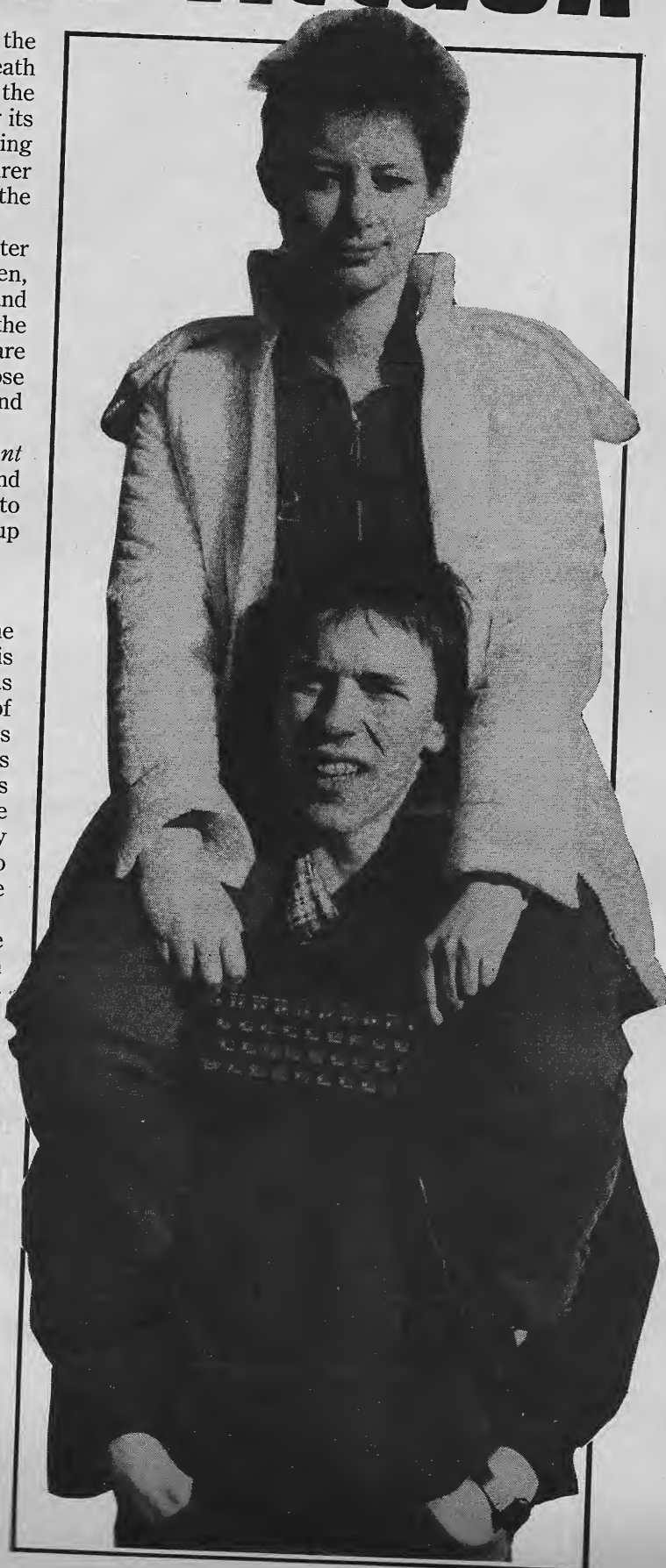
The unusual sight of a girl saving a boy in a computer game, when most other games feature only spacemen, cowboys and soldiers, was the idea of Sandy White and Angela Sutherland, pictured right, who co-wrote the program. Both are sculptors by profession and both share an interest in computers, particularly Sandy, whose sculptures are electronic constructions built around microchips and speakers.

While Sandy worked on the amazing 3D effects in *Ant Attack*, Angela designed the layout of the walled city and the animated figures of the boy and girl. The attention to detail is such that when the girl jumps her skirt moves up and down.

Words of advice

The immediate success of the game has inspired the team to think of more computer games, and Angela is considering programming some of her own. She has some words of advice to anyone who is thinking of writing commercial software. "Make your games as professional as possible, and get someone to help you, as it is difficult to be objective about your own work." It is better to approach the bigger software houses as they are more likely to sell a considerable quantity before any rival firms copy the game. Obviously it is advisable to have a contract drawn up by a solicitor, in which a flat fee or percentage of the sales is proposed.

Angela thinks it is high time that girls became more involved with computers, though she admits that often schools do little to encourage budding female programmers.



ANT ATTACK
SOFTSOLID 3D FROM
QUICKSILVA



WINNING GAMES from LYVERS^{FT}

LUNAR RESCUE (48K SPECTRUM)

A team of research scientists are trapped on the moon and you have to pilot the rescue pod from the mother ship and ferry them back safely. But you have only space for one scientist at a time. 100% M/C action with super smooth HI-RES GRAPHICS AND JOYSTICK OPTION.

GOLF (48K SPECTRUM)

Using M/C graphic routines, a game to absorb the keen novice and the scratch player. Play on a 9 or 18 hole course, with full selection of clubs. Along the greens and fairways hours of addictive sport can be had.

VOYAGER (VIC 20 8 OR 16K)

The mission is simple, but its completion is far from being so. As captain of starship you have all the best facilities at your disposal. Unfortunately the Klingons oppose you. A great M/C version of this classic computer game.

LIBERATOR (16K/48K SPECTRUM)

This game tests your aim and reactions as you command a gunsight on a homeward bound space freighter. Your cargo is the royal treasures of the empire and many people want them. A machine code presentation that should have you hooked.

PICTURE PUZZLE (DRAGON 32)

With HI RES graphics and 100% M/C. You are set the problem of putting the picture back together. Test your skill against the dragon 32 computer. A game guaranteed to hold you spell bound for hours.

SPHINX (VIC 20 8 OR 16K)

A riveting, full colour graphic adventure. That pits you against the spells and guardians of the tomb. In your quest to uncover the treasure of the pharaohs. This game will have you enthralled.

THUNDERHAWK (48K SPECTRUM)

Based on the popular arcade game Pheonix. This 100% full colour epic pitches you against the evil Albertrons who are set to destroy your race, five levels of fast action bring you to the command centre of battle fleet, can you finish the job. WITH JOYSTICK OPTION.

ANDROID INVADERS (DRAGON 32)

In a change of tactics the beings beyond the stars have developed an android of human form to do their dirty work. And with the aid of sensor jamming they may prove formidable. Using full colour, M/C, hi-re graphics this game can offer up to 21 levels of combat.

BIRD OF PREY (BASIC VIC 20)

Evil baron von fritz is out to kill his cousin, the much loved Prince Rupert. The Baron intends to throw the prince from his plane into the sacred fire pit. But you the eagle of the north will make every endeavour to save your friend Prince Rupert. With colour, sound, this M/C game is a must.

ALSO AVAILABLE:

Demon Driver Basic VIC20 — £5.95
Lunar Rescue Basic VIC20 — £5.95
Space Assault 3 or 8 VIC20 — £5.95
Apple Bug/Crazy Climber Basic VIC 20 — £5.95

Nuclear Attack/Grand Prix Basic VIC20 — £5.95
Hearts & Diamonds/Hi-Lo Basic VIC20 — £5.95
Machine Code Monitor VIC20—£14.95

Hangman/Super Docker ZX81-16K £4.95
Bouncing Gorillas ZX81-16K—£4.95

**all
games
£5.95**

Please send the following games:

Please debit my Access/Barclaycard (delete as necessary)
Card

Number

I enclose Cheque/PO for £

Name

Address

66 Lime Street, Liverpool L1 1JN
051-708 7100

Oric-1



Oric Products International
Coworth Mansion
Coworth Park
London Road
Sunninghill
Ascot
Berkshire SL5 7SE

Specifications

Price
 Numbers sold
 How sold
 Processor
 Standard RAM
 Expansion RAM
 Basic + operating system
 Display
 Tape recorder
 Backing storage

Colour

£99.95
 9,000
 Assembled
 6502
 16K
 48K model available
 16K
 40 characters × 28 lines
 Standard
 Micro discs

Software

Tansoft, Units 1 & 2 Cambridge Techno Park, New Market Road, Cambridge.

Comments

The Oric-1 is available in two versions, a 16K model and a 48K model. The QWERTY keyboard comprises keys which have the appearance of the rubber keys to be found on the Spectrum and the keys of a typewriter. There is an added bonus of a "bleep" to accompany each key as it is used but that is an optional facility and can be switched off should it become too tedious. The Oric-1 display is similar to the format used by Prestel or Ceefax and there are already plans for building a modem to make the Oric compatible with Prestel. The language of the Oric-1 is Basic. Unfortunately, the software available is somewhat limited and the fact that Oric Basic is different from Spectrum Basic means Spectrum software will not run on the Oric. That is only a temporary disadvantage, however, as games are already being translated into Oric Basic.

PROGRAM



PAINTBOX

PAINBOX, Bev Jeavon's winning program in the School Software competition, is an exciting and challenging game which makes full use of the color graphics of the 48K Spectrum.

You play the part of a blob of paint, munching the points off coloured pencils and eating blocks of paint. There are four difficult levels to pass through. In the first three

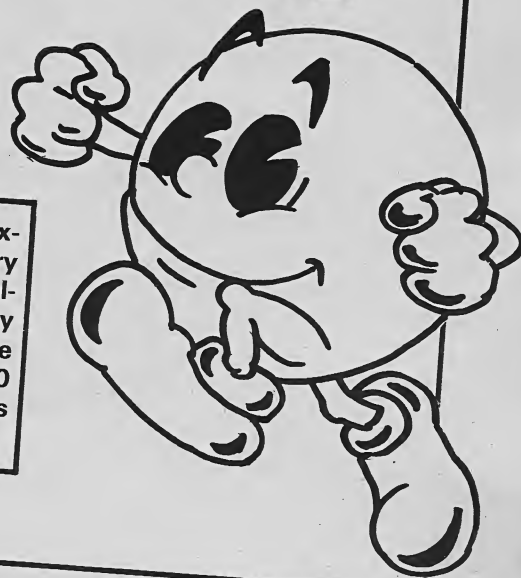
Paintbox was submitted by I F Mathias of Alvechurch, Birmingham who wins a bumper prize of £20 for a remarkably original program. All underlined characters should be entered in graphics mode.

```

5 GO SUB 9000: LET HS=0
6 LET B=1: LET S=0
10 LET Z=130: LET X=15: LET Y=
15: BORDER 7: PAPER 7: INK 7: CL
S
20 REM PLAYFIELD ONE
40 FOR A=4 TO 28 STEP 2: BRIGHT
1: LET Q=INT (RND*6)+1: PRINT
AT 0,A: INK 0:"a"
50 PRINT AT 1,A: INK 0:"b": BRIGHT
0: PRINT INK 0:AT 2,A:"a":
BEEP .02,-A: BEEP .02,-A: BEEP .
02,-A: NEXT A
60 FOR F=16 TO 21: PRINT PAPER
0:AT F,4:"
" NEXT F: FOR F=17 TO 20:
PRINT INK 0:AT F,0:"f": NEXT F
70 FOR F=16 TO 21: PRINT AT F,
5:" " PAPER 0:AT F,6:"
" NEXT F: PLOT 40,41: DRAW 198,
0: DRAW 2,-6
80 INK 0: PRINT AT 18,1:"c":A
T 19,1:"c": PLOT 17,16: DRAW 14,
-15: DRAW 0,45: DRAW -14,-15
90 INK 7: PRINT AT 18,17: PAPER
0:"SCORE: "S:AT 20,14:"HI-SCOR
E: "HS:AT 19,8: PAPER 0: INK 9
:B
99 REM MAIN LOOP
100 BEEP .0006,35: PRINT INK 0:
PAPER 6:AT Y,X:"1": PRINT AT 18
,24: PAPER 0:S: LET X1=X: LET Y1
=Y: LET G=Y: LET H=X: LET X=X+(I
NKEY#="8" AND X<29)<INKEY#="5"
AND X>3)
110 LET Y=Y+(INKEY#="6" AND Y<1
5)<INKEY#="7" AND Y>3): LET YX=
ATTR (Y,X): LET S=SCREEN# (Y,X)
GO SUB 2
120 GO TO 100
130 IF YX>63 THEN LET X=X1: LET
Y=Y1
140 IF YX=56 THEN BEEP .01,-20:
BEEP .01,0: LET S=S+10
999 REM PENCIL EXTENSION
1000 PRINT AT Y1,X1:" " INK 0:
PAPER 6:AT Y,X:"h": LET R=INT (R
ND*13)*2+4: LET P=ATTR (1,R)-120
FOR A=2 TO 15: IF ATTR (A,R)=6
3 THEN GO TO 1100
1006 IF ATTR (A,R)=56 THEN GO TO
1030
1025 NEXT A: PRINT PAPER 0:AT A,
R:" " IF S<300 THEN LET S=0: PR
INT AT 10,9: INK 0:"NOT QUALIFIE
D": GO SUB 9200: GO TO 10
1026 GO SUB 9300: GO TO 1500
1030 IF ATTR (A,R)=48 THEN GO TO
1000
1040 PRINT AT A-1,R: BRIGHT 1: I
NK 0:"c":AT A,R:"b": BRIGHT 0: I
NK 0:AT A+1,R:"a": RETURN
1105 PRINT BRIGHT 1:AT A-2,R: IN
K 0:"b": BRIGHT 0: INK 0:AT A-1,
R:"a": RETURN
1499 REM PLAYFIELD TWO
1500 LET Y=3: LET X=3: FOR F=0 T
O 15: PRINT AT F,3:"
" NEXT F: INK 0:
PLOT 9,33: DRAW 0,142: DRAW 246
,0: DRAW -15,-22: DRAW -217,0: D
RAW -15,22: DRAW 246,0: DRAW 0,-
175: DRAW -3,0: DRAW 0,172: DRAW
-239,0: DRAW 0,-139
1510 LET Z=1600: LET K=R: LET L=
A-1: LET ZZ=0: PLOT 23,39: DRAW
0,114: DRAW 217,0: DRAW 0,-105:
INK 7
1520 FOR F=4 TO 15 STEP 2: FOR G
=4 TO 28 STEP 2: PRINT BRIGHT 1:
AT F,G: PAPER 9: INK RND*9:"j":
BEEP .01,G: NEXT G: NEXT F: GO T
O 100
1599 REM SECOND SLATE
1600 IF S#="" AND YX>63 THEN LET
S=S+20: LET ZZ=ZZ+1: BEEP .01,3
5
1610 IF S#="" AND YX<56 THEN LE
T X=X1: LET Y=Y1
1620 PRINT AT Y1,X1:" " PRINT
AT Y,X: INK 0: PAPER 6:"h": IF Z
Z=78 THEN LET Z=3000: GO SUB 930
0: GO TO 2500
1625 IF Y=L AND X=K THEN PRINT A
T L,K: INK 0:"2": GO SUB 9200: G
O TO 1500
1630 IF RND>.5 THEN PRINT AT L,K
: INK 0: PAPER 0:" " GO TO 1700
1640 PRINT AT L,K:" " IF K>X AN
D ATTR (L,K-1)<64 AND K>3 THEN L
ET K=K-1: GO TO 1800
1650 IF K>X AND ATTR (L,K+1)<64
AND K<90 THEN LET K=K+1: GO TO 1
800
1660 IF L>3 AND ATTR (L-1,K)<64
THEN LET L=L-1: GO TO 1800
1670 IF L<15 AND ATTR (L+1,K)<64
THEN LET L=L+1: GO TO 1800
1700 IF L>Y AND ATTR (L-1,K)<64
AND L>3 THEN LET L=L-1: GO TO 18
00
1710 IF L<Y AND ATTR (L+1,K)<64
AND L<15 THEN LET L=L+1: GO TO 1
800
1720 IF K>4 AND ATTR (L,K-1)<64
THEN LET K=K-1: GO TO 1800
1730 IF K<29 AND ATTR (L,K+1)<64
THEN LET K=K+1
1800 PRINT INK 0:AT L,K:"2": IF
L=Y AND K=X THEN GO SUB 9200: GO
TO 1500
1810 RETURN
2499 REM PLAYFIELD THREE
2500 FOR F=17 TO 21: PRINT AT F,
0:"\": BEEP .009,F: PAUSE 2: BEE
P .005,0: NEXT F: PRINT FLASH 1:
PAPER 0:AT 19,0:"\":AT 20,0:"\
"
AT 21,0:" "
2520 FOR F=3 TO 15: PRINT AT F,
: INK 0:"
" NEXT F: FOR F=1 TO 150: B
EEP .01,F/3: LET T=INT (RND*27)+
3: LET R=INT (RND*13)+3: PRINT P
APER 0: INK RND*6:AT R,T:"j": NE
XT F: FOR F=0 TO R: PRINT INK 0:
AT F,29:"c": NEXT F: PRINT INK 0
:AT R,29:"j"
2530 PRINT AT R,24: INK 0:"
"
AT 15,3:"
"
AT 14,3:"
"
LET ZZ=5000: LET Z=3000: LET R=0:
LET Y=15: LET X=3: PRINT INK 0:
AT 1,10:"TIME BONUS: "ZZ: GO TO
100
2999 REM THIRD SLATE
3000 BEEP .003,35: IF YX<56 THE
N LET X=X1: LET Y=Y1
3010 PRINT AT Y1,X1: INK 0:" "A
T Y,X: BRIGHT 1: PAPER 6:"h": LE
T A=ATTR (Y-1,X): IF R=1 THEN GO
SUB 9200
3020 LET ZZ=ZZ-10: PRINT AT 1,22
: INK 0:ZZ:" " IF ZZ=0 THEN GO
SUB 9200: GO TO 2500
3025 IF A<56 THEN LET R=1
3030 IF YX=56 AND S#="" THEN LET
S=S+22: PRINT PAPER 0:AT 19,24:
S: GO SUB 9300: LET Z=4000: GO T
O 3500
3040 GO TO 100
3200 LET S=S+10
3205 LET F=ATTR (G,H): IF F<56 T
HEN GO TO 3300
3210 PRINT PAPER 0: INK 0:AT G,H
:"j":AT G-1,H: INK 0: PAPER 7:"
" IF F=112 THEN GO SUB 9200: GO
TO 2500
3220 LET G=G+1: IF G=16 THEN GO
TO 3400
3230 GO TO 3205
3400 BEEP .03,0: LET R=0: RETURN
3499 REM PLAYFIELD FOUR
3500 FOR F=0 TO 21: POKE 23692,2
: PRINT AT 21,0: PRINT : BEEP .0
05,F: NEXT F
3510 INK 0: FOR F=12 TO 44 STEP
4: BEEP .01,F: CIRCLE 123,91,F:
NEXT F: FOR F=0 TO 1: PRINT AT
F+9,7:"c":AT F+2,16:"c":AT F+17,
14:"c":AT F+10,23:"c": NEXT F: P
RINT AT 1,2:"DIRECTION: "AT 18,
17:"SCORE: "S:AT 20,14:"HI-SCOR
E: "HS
3530 FOR F=0 TO 5: PRINT PAPER 0
:AT 7+F,4:" "AT 15+F,11:" "AT
F,19:" "AT 8+F,26:" "AT 15+F,0
:" "AT F,26:" " PAPER
0:AT 7+F,0:" "AT F,21:"
"
AT 8+F,28:" "AT 15+F,6:"
" NEXT F
3540 LET W=9: LET H=0: RESTORE 9
320: FOR F=0 TO 7: READ M,N,O,P:

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VIC-MAN



IN THIS VERSION for the unexpanded Vic-20 of the legendary arcade game the aim is, as always, to consume as many energy pills as possible while avoiding the ghastly ghosts. Each pill scores 10 points, and the happy eater has three lives only.

READY.

```

PLOT M,N: DRAW O,P: NEXT F
3550 PRINT AT 9,6:3:AT 18,13:2:R
T 2,17:0:AT 11,24:1: PAPER Q: IN
K 9:AT 19,8:0
3999 REM 4TH SLATE
4000 FOR E=1 TO 5: LET X=15: LET
Y=10: PRINT AT 1,13:H:AT Y,X:"1"
": LET Z2=INT (RND*W)+1: GO TO Z
Z+4000
4001 LET L=2: LET K=15: GO TO 40
10
4002 LET L=10: LET K=23: GO TO 4
010
4003 LET L=18: LET K=15: GO TO 4
010
4004 LET L=10: LET K=7: GO TO 40
10
4009 GO TO 4040
4010 FOR F=0 TO 7: LET L=L+(Z2=1
)-(Z2=3): LET K=K+(Z2=4)-(Z2=2):
LET LK=ATTR (L,K): PRINT AT L,K
: INK 0:"1": IF LK<0+56 THEN GO
TO 4030
4020 IF F=6 THEN PRINT INK 0:AT
Y,X:"1": GO SUB 9200: GO TO 3500
4025 NEXT F
4030 IF INKEY#="1" THEN LET H=H+
1: BEEP .003,0: IF H>3 THEN LET
H=0
4040 IF INKEY#<>"0" THEN NEXT E
4050 FOR G=0 TO 6: LET Y1=Y: LET
X1=X: LET Y=Y+(H=2)-(H=0): LET
X=X+(H=1)-(H=3): LET YX=ATTR (Y,
X): PRINT AT Y,X:"1":AT Y1,X1:"h"
": IF YX=0+56 THEN LET S=S+50: B
EEP .01,0: PRINT AT 18,24:S: GO
TO 4070
4060 NEXT G
4070 PRINT AT Y,X:"h": NEXT E: L
ET W=W-.2: IF W=1 THEN GO SUB 93
00: GO TO 10
4080 GO TO 4000
8999 REM GRAPHICS
9000 RESTORE 9010: FOR F=0 TO 9:
FOR G=0 TO 7: READ A: POKE USR
CHR# (144+F+G,A: NEXT G: NEXT F
9010 DATA 137,66,66,44,44,28,24,
8,223,223,223,223,223,255,187,16
9,223,223,223,223,223,223,223,22
3,110,223,223,223,223,223,223,22
128,255,3,1,128,128,0,0,255,0,0,
255,255,0,0,255,60,126,219,219,2
55,195,255,219,60,66,129,129,129
,129,66,60,60,126,255,255,255,25
5,126,60,0,126,126,126,126,1,26,0
9015 REM PLOT & DRAW POSITIONS
9020 DATA 41,73,15,15,97,9,15,15
,137,160,15,15,193,96,15,15,41,1
19,15,-15,97,55,15,-15,137,144,1
5,-15,193,80,15,-15
9025 REM TUNE
9030 DATA .2,12,.2,11,.2,8,.4,7,
.2,12,.2,11,.2,8,.2,7,.5,5,.7,3,
.4,2,.5,0
9100 PAPER 2: INK 6: BORDER 2: C
LS: PRINT "PRINTBOX""1: EAT P
ENCIL POINTS (300 NEEDED""TO QU
ALIFY)""2: MUNCH BLOCKS OF PAI
NT, AVOID""PRINTMAN""3: CAREF
UL AS YOU PASS UNDER""BLOCKS OF
PRINT.EAT PENCIL POINT"
9110 PRINT ""4: REPEL ATTACKING
PRINT SPOTS""KEY 1 TO ALTER DI
RECTION""KEY 0 TO FIRE""NORM
AL CURSOR KEYS""ANY KEY TO BEG
IN": PAUSE 0: RETURN
9200 RESTORE 9030: FOR F=1 TO 12
: READ U,I: BEEP U,I: NEXT F: FO
R F=0 TO 12: BEEP .01,F: NEXT F:
LET B=B+1: IF B<4 THEN PRINT PA
PER 0: INK 9:AT 19,8:0: RETURN
9210 IF S>HS THEN LET HS=S: PRIN
T INK 0:AT 20,24:HS
9220 PRINT AT 7,11: INK 0:"GAME
OVER":AT 14,7:"ANY KEY TO START!
": PAUSE 50: PAUSE 0: GO TO 6
9300 FOR F=1 TO 5: FOR G=0 TO 15
: BEEP .03,G: NEXT G: NEXT F: RE
TURN
9990 SAVE "PRINTBOX" LINE 5

```

```

1 PRINT"J"
2 PRINT"*****"
3 PRINT"
4 PRINT"
5 PRINT"
6 PRINT"
7 PRINT"
8 PRINT"*****"
9 PRINT"
10 PRINT"
11 PRINT"
12 PRINT"
13 PRINT:GOSUB1000
14 PRINT"
15 PRINT"
16 PRINT"*****"
17 PRINT"*****"
18 PRINT"*****"
19 PRINT"*****"
20 PRINT"*****"
21 GETA:IFA#="" THEN21
100 L=0:SC=0
200 FORA=1 TO 1000:NEXTA
210 PRINT"
220 PRINT"
230 PRINT"
240 PRINT"
250 PRINT"
260 PRINT"
270 PRINT"
275 PRINT"
276 PRINT"
280 PRINT"
290 PRINT"
300 PRINT"
310 PRINT"
320 PRINT"
330 PRINT"
340 PRINT"
350 PRINT"
360 PRINT"
370 PRINT"
380 PRINT"
390 PRINT"
400 C=30720:D=8064:E=22:R=145
405 G=D+E:H=D+E*3
410 POKED+C,2:POKEG+C,2:POKEH+C,2
416 POKED,81:POKEG,81
420 POKED,81:L=L+1
423 W(1)=7910:X(1)=W(1)+C
424 POKED(1),94:POKEH(1),4
425 W(2)=W(1)-22*8:X(2)=W(2)+C
426 POKED(2),94:POKEH(2),4
430 GETA:IFA#=""THEN480
440 IFA#="A"THEN B=E
450 IFA#="S"THENB=E
460 IFA#="L"THENB=1
470 IFA#="K"THENB=-1
480 POKED+C,1:POKEH,32
490 IFPEEK(H+B)=46ORPEEK(H+B)=32
THEN510

```

```

500 B=0
510 IFPEEK(H+B)=46THENR=R-1:SC=SC+10
520 H=H+B
530 POKED+C,2:POKEH,81
531 PRINT"8 SCORE ";SC
535 IFR=0 THEN200
537 FORI=1 TO 2
540 IFH<W(I)THEND=-22:GOTO583
550 IFH>W(I)THEND=22:GOTO583
560 IFH-W(I)>0ANDH-W(I)<12THEND=1
:GOTO583
570 IFW(I)-H>0ANDW(I)-H<12THEND=-1
:GOTO583
572 J=INT(RND(0)*4)+1
573 IFJ=1THEND=-1
574 IFJ=2THEND=1
575 IFJ=3THEND=22
576 IFJ=4THEND=-22
577 IFPEEK(W(I)+D)=32ORPEEK(W(I)
+D)=46THEN601
578 IFPEEK(W(I)+D)=81THEN600
580 IFPEEK(W(I)+D)=0THEN700
582 GOTO572
583 IFPEEK(W(I)+D)=32ORPEEK(W(I)
+D)=46THEN601
590 D=0:GOTO572
600 POKED(I),32:GOTO605
601 POKED(I),PEEK(W(I)+D)
605 IFW(1)=HORN(2)=HTHEN800
610 POKED(I)+C,4
620 W(I)=W(I)+D
630 POKED(I),94:POKEH(I)+C,4
640 NEXTI
650 GOTO430
700 STOP
800 POKED+8064+((L-1)*22),1
810 IFL=3THEN900
815 FORI=1TO100:NEXTI
820 GOTO420
900 PRINT"J"
902 PRINT"DO YOU WISH TO PLAY THE "
905 PRINT"GAME AGAIN (Y/N)"
910 INPUTS$
920 IFS#="Y"THEN100
930 PRINT"*****GOOD BYE"
940 STOP
1000 A#=""
1010 PRINT
1020 FORI=1TOLEN(A$)
1030 PRINTMID$(A$,I,1)
1040 FORP=1TO150:NEXTP:NEXTI
1045 PRINT:PRINT:PRINT:PRINT
1050 RETURN
READY.

```

ALL THE BEST

Here's a sure-fire way of making certain this Christmas is packed full of fun for you and your friends. We've searched for brilliant new program sources throughout the U.K. and North America to find an exciting collection of new games — and business programs — many of which cannot be bought by mail order from any other source! These are our latest exclusive offerings. Make sure you place your order now to receive them in time for Christmas.



SNOOKER ●

Visions Snooker brings all the excitement and all the tension of big time tournaments to your TV set. With an advanced program written by a 19 year old undergraduate at Queens College Cambridge, it makes Pot Black look like a load of old Visions Snooker for the 16K ZX Spectrum. It's an exciting test of your skills on the cue. **Cassette price: £8.95.**
Ref. No: 2-53

PITMAN SEVEN ●

Your mission is to rescue two teams of seven desperate men, trapped underground on level five. You must bring each man to the surface, surviving the dangers you meet en route. **ZX Spectrum 48K.**
Cassette price: £6.95.
Ref. No: 2-52

FREE BLANK Cassettes WITH EVERY TWO

Remember then, cassettes you receive with every purchase. Why not get together with other members?

GREAT VALUE! TREMENDOUS SELECTION! PLUS A FREE OFFER EVERY TIME!

Fill in the order form right away — we're guaranteeing fast delivery, quality and satisfaction (after all, we want you to come back for more!)

The Software Workshop, Yew Tree, Selborne, Hants GU34 3JP

GUA

Order with confidence. We are not entirely satisfied with your purchase until you are. 14 days and we will

OR CHRISTMAS!

And here's a further selection of the latest games, the best-value software for your ZX-81 or Spectrum.

ZX81 Software

1-01 Stock Market

Buy and sell your way to millions! 16K RAM

£3.95

1-02 Football League

First division fun for the soccer enthusiast. 16K RAM

£3.95

1-03 Test Match

Match your wits alongside the superstars. 16K RAM

£3.95

1-12 Avenger

Avoid missiles and bombs to become the ruler. 16K RAM

£4.95

1-13 Protector

Defend your own ship from oncoming attackers. 16K RAM

£4.95

1-31 Comp-U-Share

Investment management program for unit trusts, shares and loan stocks. Complete documentation included. 16K RAM

£9.95

Spectrum Software

2-13 Sentinel

Guard your mother ship against alien attacks. 48K RAM

£4.95

2-14 Meteor Storm

Spectrum version of the ever-popular arcade game. 16K or 48K RAM

£4.95

2-15 Star Trek

Popular space program brought to life by excellent graphics. 48K RAM

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2-21 Frogger

Manoeuvre the frog across the road avoiding heavy traffic. 48K RAM

£5.95

2-22 Crazy Balloons

Guide the balloons round the maze without bursting. 48K RAM

£5.95

2-23 Arcadia

The expert's version of the popular 'Invaders' game. 16K or 48K RAM

£5.95

2-24 Golf

The finest of golf handicap games. 48K RAM

£5.95

2-25 Test Match

More exciting than the real thing! 48K RAM

£5.95

2-26 Derby Day

This favourite has to be a winner. 48K RAM

£5.95

2-41 Comp-U-Share

See 1-31 under ZX81. 48K RAM

£9.95



SHEER PANIC ●

Mining for Magnetic Quartz is a hazardous business. You have to ensure that there is plenty of oxygen to breathe, fight off the local monsters with only a shovel and counter interference with your consciousness. ZX Spectrum 16K or 48K. Cassette price: £5.95. Ref. No: 2-51

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into the number of free our order justifies them — so with friends or user group than the freebies?

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(Allow 28 days MAXIMUM FOR DELIVERY)



HI! I'M BRAINY and I really rate computers. I'm in *Load Runner* every issue so write to me at 196-200 Balls Pond Road, London N1 4AQ and I'll do my best to answer any questions you have.

Remember, Brainy's the name and, by the way, I will pay £1 to anyone whose name is mentioned. Write away!

BRAINY'S BRAINBOX

Noughts and zeros

WHENEVER I print a program from *Load Runner*, the program does not run and also the Os do not have lines through them as they do in books and your magazine. What is wrong? Is it something to do with the fact that I use a BBC micro model A?

Elizabeth Carter, aged 13,
King's Heath, Birmingham.

IT IS JUST a simple user mistake. You have been pressing the wrong key. If you want the number '0' (zero), press the number key and you will get a line through it automatically. If you want the letter 'O', press the letter key and you will get what you want. It is simple, really, isn't it?

* * *

T-shirt teaser

CAN I BUY *Load Runner* T-shirts, sweatshirts, badges or anything like that? I think *Load Runner* is superbrill and I want to make sure all my pals know it.

Niall Livingstone, aged 8,
Redruth, Cornwall.

EXCLUSIVE *Load Runner* T-shirts

are available in three sizes—small, medium, and large—each with the *Load Runner* logo printed in two colours on a white background. For details of how to buy them, see the advertisement in this printout.

* * *

The cost of extra memory

WOULD YOU tell me how expensive RAM packs are for my 16K Spectrum and could you tell me if you can use 48K programs on a 16K machine if I have the Interface 2?

Brian Dale, Yorkshire.

THE BEST RAM pack of which I know is from East London Robotics. If you have an Issue 1 Spectrum—one with grey keys—it costs £35, because you need to put in a special motherboard, but if you have an Issue 2 Spectrum, with blue keys, it costs only £23, because the special board is already in. Those extra memories are chips to go inside the Spectrum and may affect your guarantee.

You cannot use 48K cassette-loaded programs but you can use ROM cartridge software with the cartridge port in Interface 2. That is because the cartridge already contains the extra memory necessary. I cannot say more—I have an Interface 1 but not Interface 2.

Traditional entertainment

I HAVE a Commodore 64 my mum and dad will touch any of my games. I say that I should get a traditional family game like Monopoly. For their sake, can you tell me where I could buy such a thing?

Craig Hamil, aged 10, Redditch, Surrey

THE BEST version for the Commodore 64 is called Monopole and can be obtained from most software shops. If you cannot find anywhere selling the game, I know it will be available at your nearest W H Smith computer shop at Croydon.

* * *

Value for pocket money

I GET 75 pence pocket money a week so it took me ages to save for a game for our ZX Spectrum. Could you suggest a good arcade game I can buy for £6?

Kevin Heath, aged 12,
Birmingham

BUG-BYTE *Manic Miner* is very good value at £5.95. You must guide Willy through 20 caves avoiding mining robots and collecting keys, tennis racquets and boxes. The graphics are brilliant and it is a worthwhile buy.

If you prefer games where you shoot down invaders, *Arcadia* from Imagine is a game where you have to shoot aliens which move down the screen. There is a countdown from 99 every time you start a new life. If that countdown reaches zero, you get a different wave of aliens. There are 12 waves of aliens for you to pass through. The game costs £5.50.

Tranz-am from Ultimate Play the Game is another top-quality game at £5.50 and is very original, just like three other Ultimate games. The aim is to travel round the United States in a souped-up car looking for cups. It is set in the distant future and the U.S. has been devastated by war. You are looking down on the car and a small area around it. You can accelerate, and brake, but if you go too fast, you overheat, and you soon slow and stop.

The Amateur

NOWADAYS CRIME IS INCREASINGLY DETECTED AND SOLVED BY COMPUTERS...

SCRIPT
BRIAN BURRELL
ARTWORK
JOHN COOPER
LETTERS
STEVE POTTER

MORNIN' LAURA. SEEN THE EARLY PAPERS?

YOU KNOW I HAVE, YOU NIT. YOU'VE JUST 'PHONED TO ANNOY ME.

NOT SO...

NOT FAR AWAY, IN A FLAT BELONGING TO LAURA BANNON - HER MAIN INTERESTS, COMPUTERS AND CRIME...

YOU SHOULD HAVE WON EASILY.

WELL, I DIDN'T. OBVIOUSLY THE RECORDER IS NOT A NEWSPAPER OF EQUAL OPPORTUNITY.

DAILY RECORD
BIRMINGHAM BOY WINS AMATEUR CRIME COMPETITION WITH COMPUTER

MAYBE ALL YOUR CRIMINAL DATA NEEDS UPDATING.

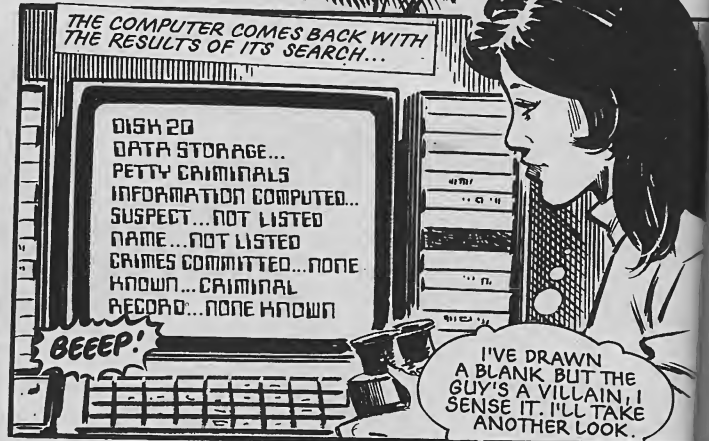
WHEN I WANT YOUR ADVICE I'LL ASK FOR IT, MARTIN, AND SPEAKING OF DATES...

THE ONE WE HAD FOR TONIGHT IS OFF!

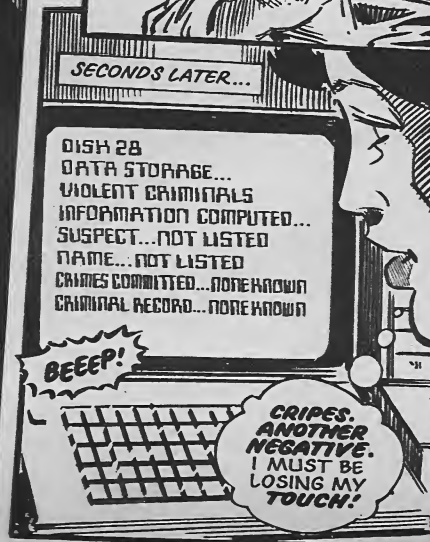
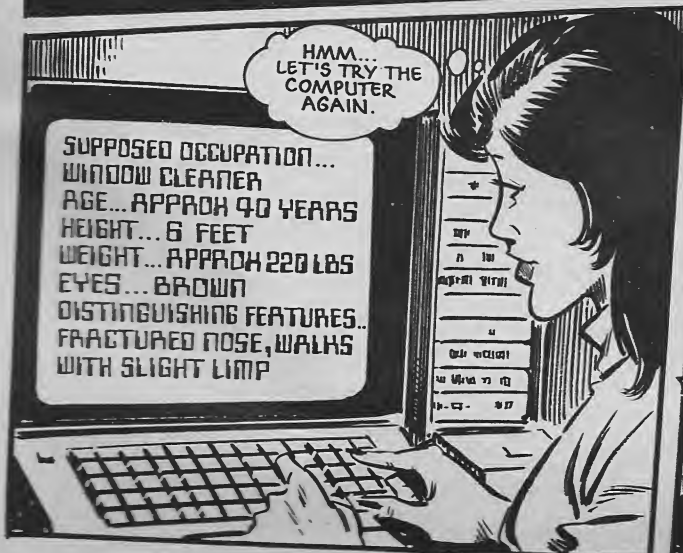
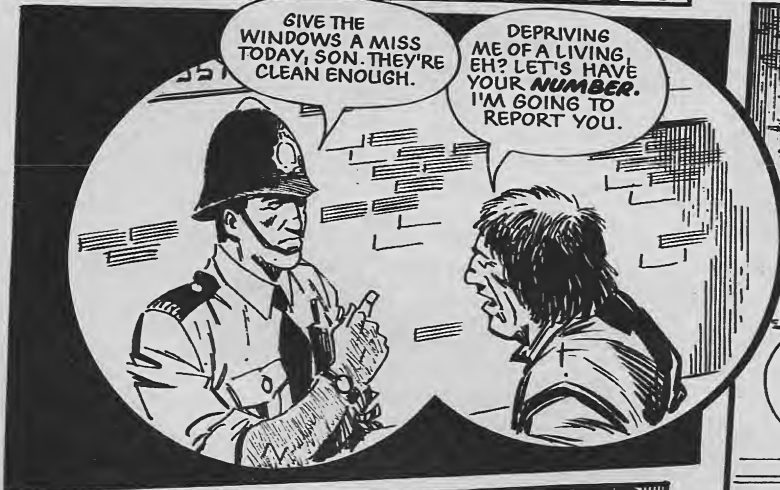
LAURA... LISTEN... I DIDN'T MEAN...

IT TAKES A COUPLE OF HOURS FOR THE GIRL TO COOL OFF.

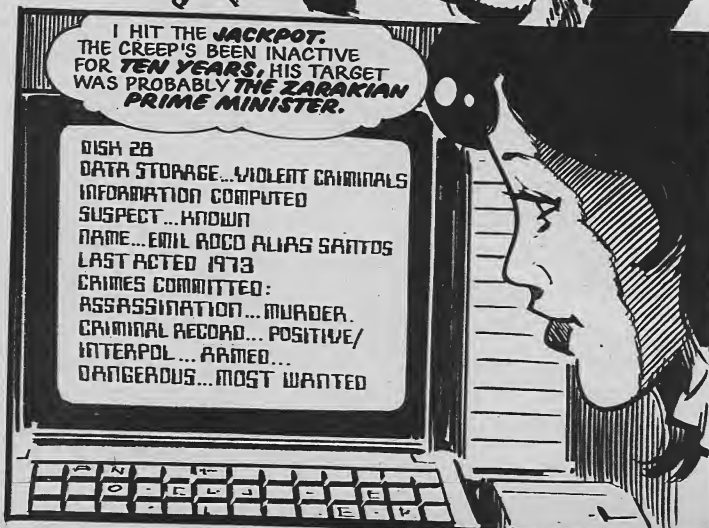
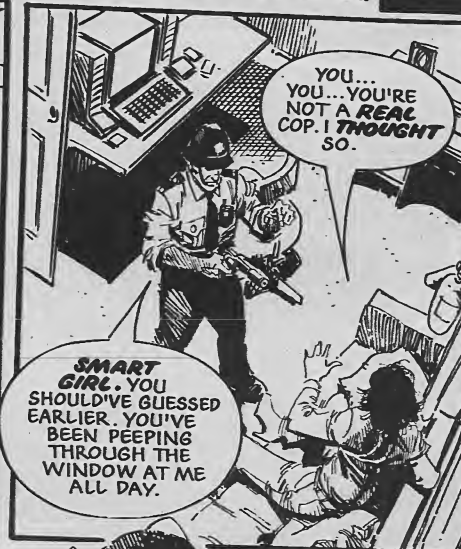
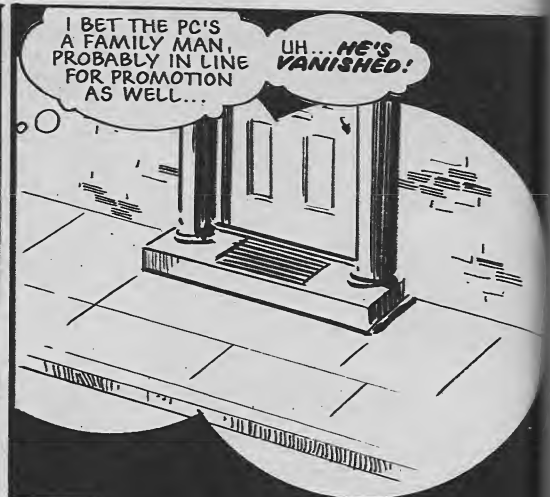
POOR MARTIN. STILL, WITH ALL THIS INFO I'VE COLLECTED ON CRIME FROM THE PRESS, I SHOULD BE EMPLOYED BY SCOTLAND YARD.



TALES FROM THE MEMORY BANK



TALES FROM THE MEMORY BANK



The End

TERMINAL SOFTWARE

PINBALL WIZARD has bumpers, rollovers, a jackpot, slingshots and 3 flippers that you can even use to trap and hold the ball! You can even nudge the table, but not too often or it tilts! PINBALL WIZARD IS PURE ENJOYMENT.

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VIC 20

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The FIRST 64 games cassette to have SIMULTANEOUS TWO-PLAYER ACTION-realistic sound effects too.

Commodore 64
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Sinclair
Spectrum 48k

SPACE ISLAND

VAMPIRE VILLAGE

CITY

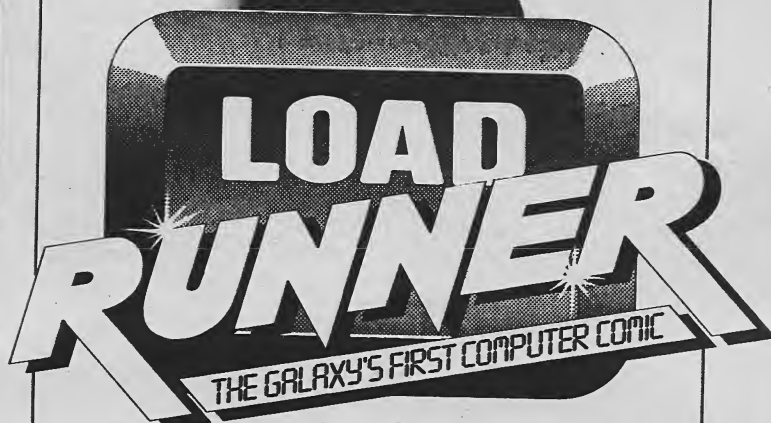
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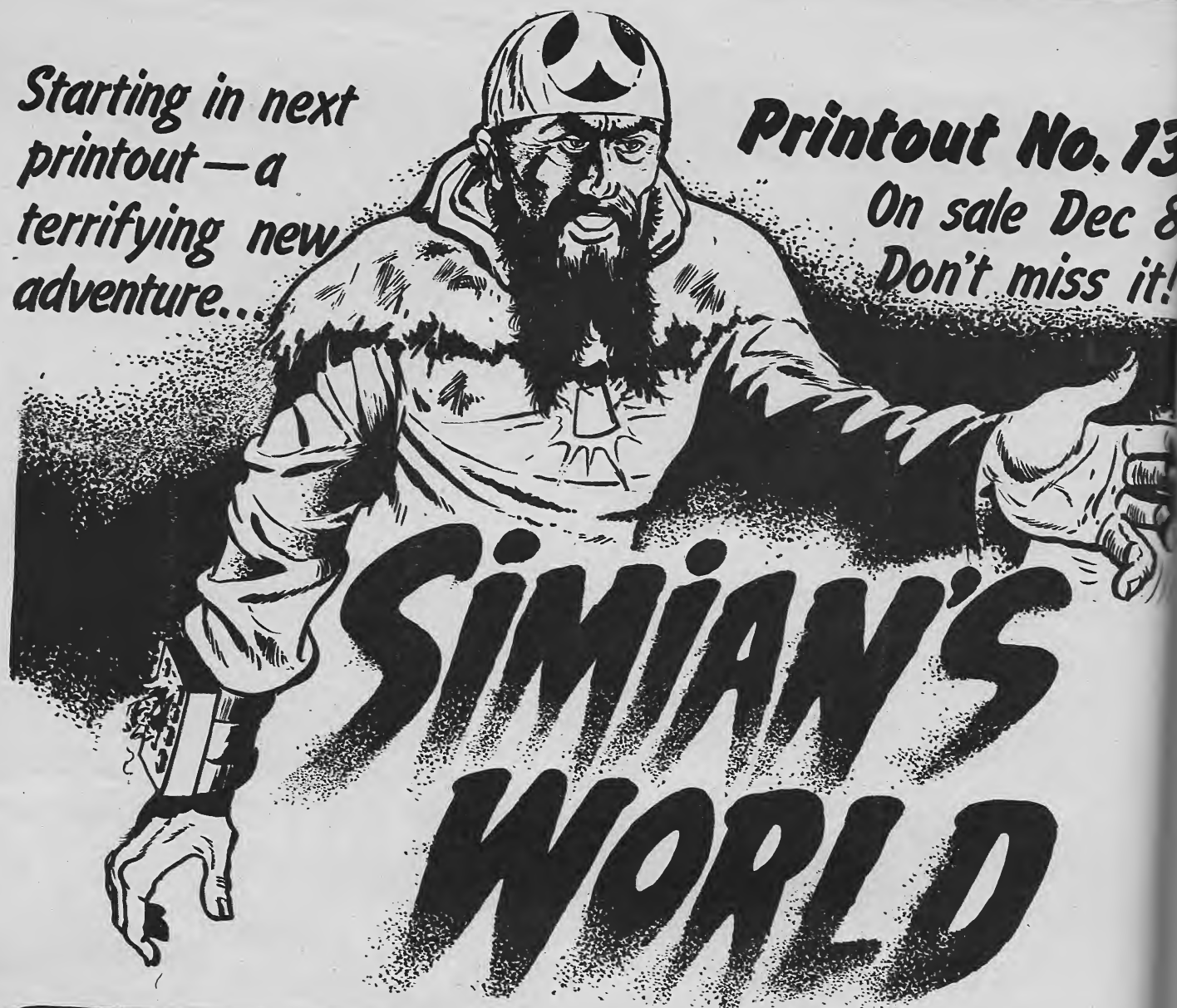
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Introducing computers

MANY BOOKS have been written about computers but few of them are easy to follow or understand. Macdonald & Co has recently published four books related to computers, and each of them presents information in a lively, well-illustrated format which is both informative and easy to follow.

The Whizz Kids Computers book is both an introduction to computers and a useful guide to programming. It explains many simple programming techniques for beginners, using amusing cartoons and printouts which you can feed into your machine.

Just Look at Computers is a general survey of the new technology. Colour photographs and illustrations cover all aspects of computers and the role they play in today's society, including uses in school, entertainment,

business, medicine and in the home. There are sections on how computers work and lists of important milestones in the history of computing.

Introducing Computers, and Computers and Mathematics, are both intended for the older reader and discuss the long-term effects of computers on society, as well as serving as a general introduction.

All four books have glossaries to explain various computer buzzwords and together they form a handy library for the would-be computer expert. They can be obtained from Macdonald & Co, Maxwell House, 74 Worship Street, London EC2A 2EN.

If you belong to the Load Runner Decoders, however, you might be lucky enough to win all four books. Turn to page 10 to see if you are one of the chosen members!

Spectacular, volcanic, tantalizing, terrific

BOOKS OF LISTINGS are nothing new but a new series of books for the Spectrum, Vic-20, TI99/4A and Tandy computers has raised the standards of such books. They are titled *Spectacular Games for Your ZX Spectrum*, *Volcanic Games for Your Vic-20*, *Tantalizing Games for Your TI99/4A* and *Terrific Games for Your Tandy Color*.

All four books include the same program listings, together with il-

lustrations and photographs relating to the games. In some cases the screen dumps, or effects created when a program is run, are shown opposite the listing.

Few of the programs are new or innovative although many of them have interesting names such as *Zombies in the Swamp*, *Shakespearean Shuffle* and *Galactic Monsters*.

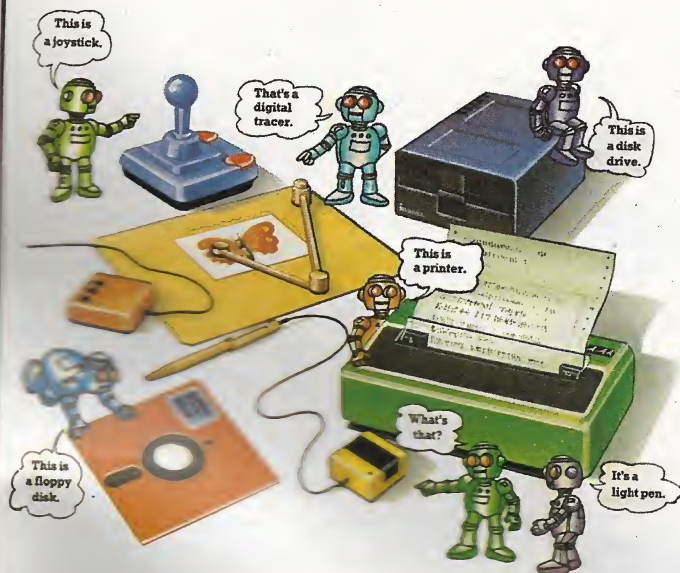
The publishers have gone to the trouble of using dot matrix print-

ers, even on the Sinclair machine, so you have no difficulty in reading them. Most of the programs have routines which can be taken out of them for use in your own programs, although the introductory text accompanying the listings does not give any hints about program structure or what lines perform which operations.

All of the games can be obtained from Addison-Wesley Publishing Co and they cost £3.95.



Colourful guides to technology



USBOURNE PUBLISHING has enlarged its excellent range of computer and information technology books for the young, and the not so young, with eight new titles. They include *Computer Jargon*, *Information Revolution*, and *Robotics*.

As usual all the books are colourfully illustrated with excellent pictures and cartoons which help readers to understand the text.

Information Revolution gives a general introduction to the ways in which electronics is changing our lives. There is a brief discussion on how information is transmitted from one place to another using computers, telephone lines and satellites. That is rounded-off with a look at how robots are used in factories. Illustrations are used throughout.

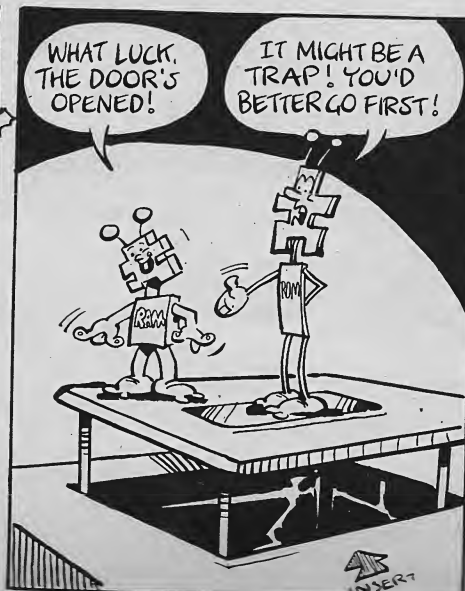
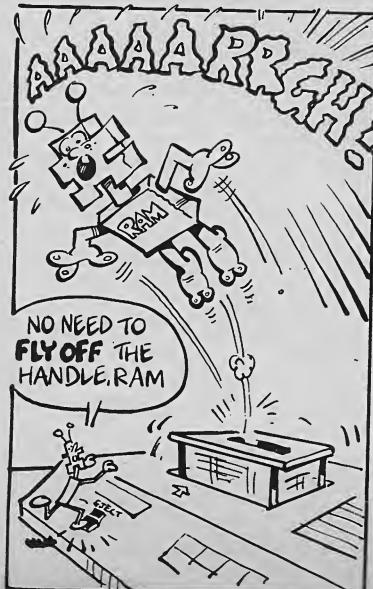
The same pictorial approach is followed in the Usbourne New

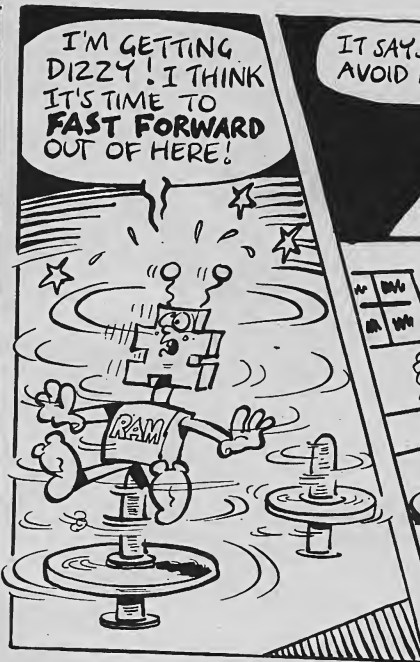
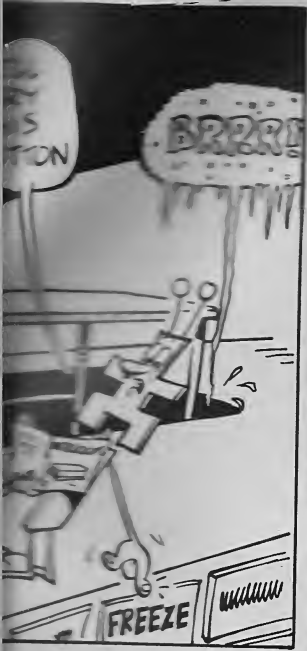
Technology book on *Robotics*. Every aspect of the use of robots in industry and in space exploration is covered and the book also explores the potential use of such machines for the future.

Computer Jargon is for the complete beginner in the computer field and is suitable for use by anybody. It explains most of the words and phrases used when describing computers and also includes some cartoons of comical robots. Again, text and pictures complement each other to make it an ideal textbook for school or home.

The other books in the series include *Adventure Programs*, *Practical Things to do with Computers*, *Better Basic* and *Practise your Calculator Skills*. They can all be obtained from Usbourne Publishing, 20 Garrick Street, London WC2E 9BJ, and cost £1.99, except for *Information Revolution*, which costs £3.95.

THE ADVENTURES OF ROM AND RAM





ROM & RAM PLAYBACK AGAIN IN THE NEXT ISSUE!



WHEN Williams Electronic Inc introduced *Defender* into the U.K. in 1981, most arcadesters thought a robotic arm should have been supplied with it to press the numerous buttons at the proper moment. There were approximately 6,000 units distributed around the country but they are well in excess of that number now and almost every arcade has at least one *Defender* machine. It is still a very popular video game and has some excellent graphics, bright colours being prominent.

You control a multi-coloured *Defender* craft, zipping along a star-studded sky firing at Landers who are trying to abduct humanoids scattered across a mountainous landscape. If you destroy a Lander carrying a humanoid, try to rescue it and return it to the ground to gain extra points. If a Lander succeeds in reaching the top of the screen with a captured humanoid it changes into a deadly mutant and swarms in to destroy you.

When all humanoids are destroyed and there are only mutants left, death is imminent. After every fifth attack wave, all humanoids are replaced on the planet. There are numerous other aliens to contend with. They include Bombers, which drop clusters of deadly space mines in your flight path and Pods, which appear after the first wave and, when hit, release clusters of deadly swarms which surround your craft, firing bombs.

One of the last aliens to appear on the screens is a Baiter, which arrives from behind and flies just a little too close for comfort, firing all the time. A good tip at that point is to give two quick taps on the reverse button to confuse the Baiter and the mutants, giving you time to get in a shot to destroy the former. One excellent feature of the game is the long-range scanner located at the top of the screen, giving the player a panoramic view of the entire battle area.

If, by looking at the scanner, you can see a large cluster of aliens approaching, prepare to press the Smart Bomb button; that will destroy every alien on the screen at that instant. That very effective weapon should be used only in emergencies, as there are only a few for the duration of the game.

Try to avoid excessive use of the Hyperspace feature, as there is no guarantee that you will survive the trip to another section of the screen. If you are unfortunate enough to crash into an



alien or to be bombed, your ship explodes into a cascade of brilliant fragments.

Software

ATARI produces *Defender* for the VCS and 400/800 computers, although the VCS version is poor on graphics.

BBC owners can play *Planetoids* by Acornsoft, which is one of the best

versions available. For the 16K ZX-81 there is *3D Defender*, by New Generation, which shows the player looking out of the cockpit window of the craft.

There is also *Galactic Abductors* for the Vic-20 by Anirog Software. Most *Defender* games are reduced in playability as some functions are keyboard-operated.

Ratings out of 10

Atari VCS	(6)
400/800	(8)
BBC	(9)
ZX-81	(7)
Vic-20	(7)

Providing processor power to The Controller in publishing *Load Runner* were Bill Scolding (editor) and June Mortimer (administration). Chris Winch, Harold Mayes MBE, Nigel Clark, Terry Cartwright and Richard Hease linked into the system. The corporate might of ECC Publications of 196-200 Balls Pond Road, London N1 4AQ was utilised continually. Printout by Cradley Print PLC, Warley, West Midlands. Distributed by Spotlight Magazine Distribution Limited, 01-607 6411. ISSN 0264-8369. © 1983 *Load Runner*.